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# Five-Year Review Report

## Second Five-Year Review Report

## for

## E. H. Schilling Landfill

## Hamilton Township
## Lawrence County, Ohio

September 2002

PREPARED BY:

United States Environmental Protection Agency
Region 5
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Date:

9/20/02

# Five-Year Review Report

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## List of Acronyms

| | |
|---|---|
| ARAR | Applicable or Relevant and Appropriate Requirement |
| CD | Consent Decree |
| CERCLA | Comprehensive Environmental Response Compensation Liability Act |
| COI | Constituent of Interest |
| MCL | Maximum Contaminant Level |
| mg/kg | Milligram Per Kilogram |
| NCP | National Contingency Plan |
| NPL | National Priorities List |
| OEPA | Ohio Environmental Protection Agency |
| ppb | Parts Per Billion |
| ppm | Parts Per Million |
| PRP | Potentially Responsible Party |
| RD/RA | Remedial Design/Remedial Action |
| RI/FS | Remedial Investigation/Feasibility Study |
| ROD | Record of Decision |
| RPM | Remedial Project Manager |
| SVOC | Semi-Volatile Organic Chemical |
| TCL | Target Compound List |
| U.S. EPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Chemical |

## Executive Summary

The remedy for the E. H. Schilling Landfill in Lawrence County, Ohio, included the following major components: 1) Dewatering and treating of approximately 7,000,000 gallons of leachate and liquid waste from within the landfill; 2) Construction of a 3-acre RCRA Subtitle C cap over approximately 100,000 cubic yards of waste; 3) Consolidation under the landfill cap of 500 cubic yards of sediment and 750 cubic yards of soil downgradient from the earthen dam; 4) Construction of a perimeter cut-off wall, consisting of a grout curtain for the bedrock and slurry wall for the unconsolidated zones; 5) Construction of a clay berm to obtain the required factor of safety of greater than 1.5 for long-term stability of the earthen dam; 6) Long-term maintenance, security and restrictions on future land use; and, 7) Quarterly monitoring of all monitoring wells. The site achieved construction completion with the signing of the Preliminary Closeout Report on August 3, 1993. The trigger action for this five-year review was the actual completion date of the last five-year review which was September 29, 1997.

The assessment of this five-year review has found the remedy to be protective of human health and the environment. Short term protectiveness has been achieved and exposures eliminated. Long-term protectiveness will be achieved when groundwater cleanup standards based on Safe Drinking Water Act MCLs, risk-based levels, and State of Ohio criteria for protection of groundwater quality are met, and by maintaining a deed restriction for the maintenance of a landfill cap to prevent unacceptable exposure.

# Five-Year Review Summary Form

| SITE IDENTIFICATION | | |
|---|---|---|
| **Site name *(from WasteLAN)*:** E.H. Schilling Landfill | | |
| **EPA ID *(from WasteLAN)*:** OHD980509947 | | |
| **Region:** 5 | **State:** OH | **City/County:** Hamilton Township, Lawrence County |

| SITE STATUS | |
|---|---|
| **NPL status:** X Final ☐ Deleted ☐ Other (specify) ______ | |
| **Remediation status** (choose all that apply): ☐ Under Construction X Operating ☐ Complete | |
| **Multiple OUs?*** ☐ YES X NO | **Construction completion date:** 08 /03 /1993 |
| **Has site been put into reuse?** ☐ YES X NO | |

| REVIEW STATUS | |
|---|---|
| **Lead agency:** X EPA ☐ State ☐ Tribe ☐ Other Federal Agency ______ | |
| **Author name:** Mazin M. Enwiya | |
| **Author title:** Remedial Project Manager | **Author affiliation:** U.S. EPA |
| **Review period:**** 06 / 03 / 2002 to 09/6/02 | |
| **Date(s) of site inspection:** 06/5/2002 | |
| **Type of review:** X Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion | |
| **Review number:** ☐ 1 (first) X 2 (second) ☐ 3 (third) ☐ Other (specify) ______ | |
| **Triggering action:** ☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____ ☐ Construction Completion X Previous Five-Year Review Report ☐ Other (specify) ______ | |
| **Triggering action date *(from WasteLAN)*:** 09 / 29 / 1997 | |
| **Due date *(five years after triggering action date)*:** 09 / 30 / 2002 | |
| | |
| | |
| | |

## Five-Year Review Summary Form, cont'd.

**Issues:**

An optimization review of the extraction rates is warranted based on recent slow extraction rates. A review of original dam stability calculations and construction quality to address its integrity and erosion problem.

**Recommendations and Follow-up Actions:**

Complete optimization review of the leachate and groundwater extraction system. Retain a geotechnical engineer to review original dam stability calculations and construction quality. Conduct optional field activities to update relevant site information; this may include a survey, the installation of piezometers, and additional recovery tests.

**Protectiveness Statement(s):**

The assessment of this five-year review has found the remedy to be protective of human health and the environment. Short term protectiveness has been achieved and exposures eliminated. Long-term protectiveness will be achieved when groundwater cleanup standards based on Safe Drinking Water Act MCLs, risk-based levels, and State of Ohio criteria for protection of groundwater quality are met, and by maintaining a deed restriction for the maintenance of a landfill cap to prevent unacceptable exposure.

**Other Comments:**

None

# Five-Year Review Report

## I. Introduction

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

The Agency is preparing this five-year review pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The agency interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii) states:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (U.S. EPA) Region 5 has conducted a five-year review of the remedial actions implemented at the E. H. Schilling Landfill site, located in Lawrence County, Ohio. This review was conducted by the Remedial Project Manager (RPM) from June 2002 through September 2002. This report documents the results of the review.

This is the second five-year review for the E. H. Schilling Landfill site. The triggering action for this statutory review is the date of the first five-year review as shown in EPA's WasteLAN database: 09/29/1997. This review is required because certain response actions are ongoing and hazardous substances, pollutants, or contaminants are or will be left on site above levels that allow for unlimited use and unrestricted exposure.

## II. Site Chronology

**Chronology of Site Events**

| Event | Date |
|---|---|
| Landfill Lifetime | **1969-1980** |
| State of Ohio Preliminary Studies | **1979** |
| NPL listing | **09/1983** |
| U.S. EPA Removal actions | **05/31/1986** |
| Administrative Order on Consent signed | **03/31/1987** |
| Fund-lead Remedial Investigation/Feasibility study complete | **06/22/1987** |
| RI report completed | **08/1/1989** |
| FS report completed | **08/25/1989** |
| ROD signed | **09/29/1989** |
| Settlement reached between four of six PRPs | **04/1990** |
| Consent Decree for RD/RA | **05/31/1991** |
| Explanation of significant differences | **02/28/1992** |
| Remedial design completion | **04/17/1992** |
| Construction contract awarded | **06/09/1992** |
| Remedial construction begins | **06/17/1992** |
| Pre-final inspection | **06/30/1993** |
| Construction completion date | **08/03/1993** |
| Extraction system operational | **08/3/1993** |
| Quarterly sampling changed to semi-annually | **04/1996** |
| Previous five-year review | **09/29/1997** |
| Site inspection | **06/5/2002** |

## III. Background

### Physical Characteristics

The E.H. Schilling site is located in Hamilton Township, Lawrence County, Ohio, approximately four miles southwest of the City of Ironton. It is situated in a valley draw incised into the west slope of a ridge separating Winkler Hollow (west of site) from Schilling Hollow (east of site), 0.8 miles north of the Ohio River, and approximately 0.5 miles north of U.S. Route 52. Vegetation over the landfill consists of poor quality grass and shrubs. The adjacent valley sides are heavily wooded. A tributary of Winkler Run extends from the base of the earthen dam along the valley floor to Winkler Run. The site has rugged topography with high relief. Slopes in the area generally steep with narrow ridge tops. It is estimated that 23,000 persons live within a four mile radius of the site.

### Land and Resource Use

The E.H. Schilling landfill site was operated during the period of 1969-1980. It was created by filling the valley draw with waste, and then constructing a steeply sloping earthen dam, some forty five feet high, in a north-south orientation across the draw to contain the waste. The earthen dam is about sixteen feet wide along the crest.

The current land use of the surrounding area consists of a few residential properties located to the north and east of the site. The Wayne National Forest extends north-south about 400 feet east of the site. The site itself is currently fenced enclosing all soils that have undergone, or are currently undergoing, treatment, on-site. In establishing cleanup requirements for the site, U.S. EPA considered the theoretical possibility of residential development of the site.

Bedrock in the area belongs to the Allegheny and Pottsville formations. The bedrock strata reportedly dip eastward at approximately twenty to sixty feet per mile. Three water-bearing zones can be distinguished beneath the site: 1) An uppermost water-bearing zone occurs within the landfill and surrounding soil and bedrock. Flow in this zone from the landfill is primarily westward, towards the embankment; 2) A shallow bedrock water-bearing zone exists within the interbedded sandstone and shale strata. The water-bearing zone is perched on shale strata in the vicinity of the site. Topography and the structural dip of the strata in the vicinity of the site primarily control the groundwater flow direction for the shallow bedrock water-bearing zone; 3) A deeper water-bearing zone occurs in sandstone bedrock. The general groundwater flow direction for this deeper bedrock water-bearing zone is expected to be eastward, based on dip control. Fracture features will also influence flow.

### History of Contamination

The landfill was operated by E.H. Schilling and Son, General Contractors, Inc. The landfill began receiving waste in January 1969. It was developed largely as an exclusive landfill for the Dow Chemical plant in Hanging rock and the USS Chemical (Aristech) plant in Haverhill. In August 1971, the landfill was licensed by Lawrence County to accept non-hazardous dry industrial waste. Records indicate that Aristech Chemical Corporation, the Dow Chemical Company, Ashland Chemical Corporation, Associated Metals & Minerals, Inc. and Matlack, Inc. deposited hazardous waste at the landfill. During its operation, the landfill accepted a wide variety of hazardous industrial and non-hazardous wastes. The waste consisted of Styrene monomer, Phenol, Acetone, Alcohol, Wastewater treatment sludge, Coal Tar compounds, Polystyrene, Foam material. Following a series of permit violations, the site ceased operations in July 1980.

Groundwater sampling from extraction wells and monitoring wells was conducted beginning with the fourth quarter (August) of 1993 and is ongoing (most recent sampling round was completed in April 2002). Sampling was conducted quarterly from 1993 through 1996 and semi-annually since then. Analysis of the samples includes volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total metals, and pesticides.

The extent of contamination at the site is limited to the landfill and the area immediately surrounding it. Groundwater data shows that contamination at the site is limited to monitoring wells immediately surrounding the landfill and monitoring wells downhill of the landfill dam.

For wells installed inside the landfill, there are 15 parameters whose maximum concentrations from all data collected to date have shown an exceedance at one point from 1993 until 2002. Table 2 also shows a comparison of these maximum concentrations. All of the exceedances, with the exception of benzo(a)pyrene and total lead, were collected from sampling events prior to the third quarter 1996.

### Initial Response

The landfill was operated by E.H. Schilling and Son, General Contractors, Inc. The landfill began receiving waste in January 1969. Following a series of permit violations, the site ceased operations in July 1980.

In September 1983, the site was placed on the National Priorities List. The final Remedial Investigation/Feasibility Study (RI/FS) reports were released in August 1989. The U.S. EPA issued a Proposed Plan for remedial action in April 1992. The RI/FS was subsequently began in June 1992.

## Basis for Taking Action

The U.S. EPA and OEPA involvement dates back to 1979 when preliminary site studies and limited data collection was conducted. In 1983, an OEPA letter identified a number of listed hazardous materials as being present in samples collected at the base of the earthen dam. These samples were taken from soil, leachate, and surface water. At that time, active leachate seeps were noted at several points along the base of the earthen dam.

During the RI event, two sampling rounds were conducted. The first round of sampling was conducted in the Spring of 1988 for landfill waste, leachate, surface soils, surface water, sediment, benthic organisms, and ground water. A second round of sampling was performed in Mid-December of 1988 for ground water, leachate, and surface water.

The results of the RI revealed the following analytical results by media type in the vicinity of the landfill:

*Surface Soils*

A total of 35 surface soil samples were collected and analyzed for TCL chemicals. The analysis detected the presence of total of three VOCs, SVOCs, seven metals, and cyanide. The extent of contamination of surface soils on the landfill and dam primarily consists of those areas which are exposed to landfill leachate. Contamination of surface soils outside of the immediate landfill area is primarily limited to metals, which occur naturally in this region.

*Sediments*

Stream sediment samples were collected at six sample locations. The analysis of the sediment samples for TCL chemicals detected the presence of VOCs, SVOCs and metals. This analysis revealed that the extent of the contaminated sediments is limited to the mid to upper reaches of Winkler Run.

*Surface Water*

A total of six surface water samples were collected and analyzed for TCL chemicals. Test results detected the presence of metals.

*Ground Water*

Ground water samples were collected from the eight monitoring well clusters at the site. The ground water samples were analyzed for TCL chemicals. Analysis of the ground water samples detected the presence of VOCs, SVOCs, and dissolved metals.

*Air*

Site-specific air quality data were collected and analyzed for total suspended particulates, heavy metals, and VOCs. Test results detected the presence of twenty metals. No VOCs were detected in the air samples collected.

*Baseline Risk Assessment*

The baseline risk assessment for the site evaluated the site specific physical and analytical data in characterizing potential risks to human health and the environment in the absence of any remedial action at the site.

Twenty-nine complete human receptor and thirty-seven complete environmental receptor exposures pathways exist at the site based on ten indicator chemicals.

## IV. Remedial Actions

**Record of Decision**

On September 29, 1989, the U.S. EPA signed the Record of Decision (ROD) that called for the following actions:

- Dewatering and treating of approximately 7,000,000 gallons of leachate and liquid waste from within the landfill. The on-site treatment system consists of metals precipitation using sulfide, air stripping and carbon adsorption.
- Construction of a 3-acre RCRA Subtitle C cap over approximately 100,000 cubic yards of waste.
- Consolidation under the landfill cap of 500 cubic yards of sediment and 750 cubic yards of soil downgradient from the earthen dam.
- Construction of a perimeter cut-off wall, consisting of a grout curtain for the bedrock and slurry wall for the unconsolidated zones. The cut-off wall will prevent lateral infiltration of groundwater into the landfill.
- Construction of a clay berm to obtain the required factor of safety of greater than 1.5 for long-term stability of the earthen dam.
- Long-term maintenance, security and restrictions on future land use. In this case a deed restriction is required as long as the landfill cap is necessary to prevent

unacceptable exposure. Furthermore, the deed restrictions for the site dictate that: 1) There shall be no tampering with, or removal of, the containment or monitoring systems that remain on the site as a result of implementation of remedial action under the consent Decree; and, 2) There shall be no other interference with the performance of work and remedial action, or with the maintenance of remedial measures implemented pursuant to the Consent Decree.

- Treat and discharge water under the National Pollution Discharge Elimination System (NPDES) effluent limitations.

- Quarterly monitoring of all monitoring wells. If groundwater exceeds action based levels, it will be collected and treated in the on-site treatment system.

- Cleanup levels are to correspond to the elimination of all cumulative carcinogenic risks greater than $1x10^{-6}$ and a remaining cumulative non-carcinogenic hazard index of less than or equal to 1.

The selected remedy would use permanent treatment systems to eliminate the principal threat posed to human health and the environment by extracting the leachate and treating the contaminated groundwater.

The Record of Decision established groundwater cleanup standards based on Safe Drinking Water Act Maximum Contaminant Levels (MCLs), risk-based levels, and State of Ohio criteria for protection of groundwater quality.

**Consent Decree**

In November 1989, negotiations between the U.S. EPA and the responsible parties began for the Remedial Design/Remedial Action (RD/RA). A Consent Decree settlement was reached in April 1990, between four of the six responsible parties and the U.S. EPA. The CD was subsequently entered with the United States District Court for the Southern District of Ohio on May 31, 1991, for the ultimate implementation of the ROD.

**Remedial Design**

The Remedial Design and subsequent construction of the on-site leachate collection and treatment system was completed in June 30, 1993. At the beginning of the Remedial Design, a treatability study was completed on the landfill leachate to finalize treatment system design requirements. Results from the treatability study indicated that a significant change to the leachate and liquid waste treatment train would be required. The air stripper would not be as effective as originally expected in meeting the performance/cleanup standards and would be replaced with a biological treatment system using sequencing batch reactors (SBRs). Also, the treatability study showed that sodium hydroxide would be more favorable than sulfide as the reagent used to precipitate metals form the leachate/liquid waste. These two significant changes were executed in an Explanation of Significant Differences, dated February 28, 1992. The treatment train for the leachate/liquid waste consists of metal precipitation, two SBRs in parallel, sand filtration, and carbon adsorption. The designs were completed by the PRPs and approved by the U.S. EPA in April 17, 1992.

## Remedial Action

### Remedy Implementation

A construction contract was awarded by the responsible parties on June 9, 1992, and on-site remedial activities began on June 17, 1992. The United States Army Corps of Engineers (USACE) was used by the agency for oversight of the construction activities by the responsible parties. The responsible parties also used the remedial design firm to ensure the contract specifications were adhered to by the construction firm.

During the Remedial Action activities, three major changes occurred: 1) At the start of the construction in preparation for the grout curtain/slurry wall, an area outside the landfill limits was discovered which contained degraded drums and contaminated soil. Approximately 5,000 cubic yards of the newly discovered contaminated soil was excavated along with clean surrounding soil and used as fill material to bring the landfill up to grade. The perimeter cut-off wall and landfill cap were extended to near the newly excavated area; 2) Pursuant to the ROD, an area estimated to be approximately 1,300 cubic yards of soil and sediment downgradient from the earthen dam was scheduled to be excavated and consolidated under the landfill cap. After soil and sediment analysis, the volume consolidated increased to 3,070 cubic yards; 3) During the perimeter cut-off wall installation, rock elevation was higher than anticipated which decreased by one-half the length of the slurry wall through the unconsolidated zones surrounding the landfill. In addition, over 3,100 cubic yards of grout was pumped into the bedrock fractures under and surrounding the landfill which was over five times the estimated amount.

For the contaminated groundwater and leachate extraction and treatment system, the PRPs installed a total of four extraction wells (EW-1 through EW-4). A treatment plant was constructed on-site, where the extracted groundwater and leachate is treated prior to discharge to an adjacent creek in accordance with NPDES discharge requirements. The ROD estimated that the groundwater extraction and treatment system would need to operate for a period of 30 years. A final inspection of the groundwater extraction and treatment system was conducted by the U.S. EPA on August 3, 1993. At that time it was determined that the groundwater and leachate extraction and treatment system was constructed as designed. The system began operation on August 3, 1993.

In August 1993, with the signing of the Preliminary Close Out Report, the U.S. EPA determined that the site achieved construction completion status. The U.S. EPA and the State have determined that all RA construction activities were performed according to specifications. After groundwater and soil cleanup levels have been met, the U.S. EPA will issue a Final Close Out Report. This will require that all areas of the site with contamination be verified as clean through soil sampling.

**System Operation/Operation and Maintenance**

***Groundwater Extraction/Treatment***

Operation and Maintenance of the Groundwater Extraction and Treatment System is performed by the PRPs in accordance with the *Leachate Treatment System Operation and Maintenance Plan*. Pursuant to that manual, the effluent from the treatment system is monitored on a monthly and semi-annually basis. Inspections of the physical plant are also carried out during those monitoring events.

Groundwater monitoring has been performed pursuant to the *details outlined in the Groundwater Monitoring Plan* to ensure hydraulic capture and removal of leachate is occurring and that chemical levels in the groundwater are decreasing. Analyses being performed include the chemicals of concern listed in the ROD and CD and those parameters required under the NPDES discharge requirements issued by the OEPA. The U.S. EPA, in consultation with the OEPA, will certify completion of the groundwater remediation once it has been demonstrated that cleanup levels have been attained and maintained for all chemicals of concern listed in the ROD and CD.

Based upon operating flow data, as of June 2002, the groundwater and leachate collection and treatment system has treated approximately 2.3 million gallons of contaminated water.

Since the fourth quarter 1993, the monitoring network of wells has been sampled quarterly through 1996, and semi-annually since then. The network has included 4 extraction wells and 10 monitoring wells within the landfill area, and 6 monitoring wells outside of the landfill area.

## V. Progress Since the Last Review

The September 29, 1997, Five-Year Review recommended that the PRP group continue operations as designed until final groundwater cleanup standards, as set forth in the ROD and CD, are achieved. Since that first five year review, the PRP group has continued to operate the system as required by the ROD and CD.

## VI. Five-Year Review Process

### Administrative Components

The PRPs were notified of the initiation of the five-year review on April 1, 2002. The Hamilton Township Five-Year Review was led by Mazin Enwiya of the U.S. EPA, Remedial Project Manager for the E. H. Schilling Landfill. Kris Vanecko, of the OEPA, assisted in the review as the representative for the support agency.

The review, which began on June , 2002 consisted of the following components:

- Document Review;
- Data Review;
- Site Inspection; and,
- Five-Year Review Report Development and Review.

### Community Involvement

The RI/FS reports and the proposed plan for the site were released on August 25, 1989, for a 30-day public comment period. A notice of availability of the these documents was issued in the local newspaper, in the Town of Ironton, Ohio. A public meeting was conducted by U.S. EPA and OEPA on September 7, 1989.

Interest in the project over the past 5 years has been minimal. This may be in part to the site being located in an area that is not heavily populated, and not being visible to individuals driving by.

A notice to the community regarding the 5-Year Review was issued to the community in September 2002.

### Document Review

This five-year review consisted of a review of relevant documents including O&M records and monitoring data (See Attachment 1).

*Data Review*

Groundwater monitoring has been occurring at this site since November 1993. The July 25, August 8, August 16, and August 29, 2002, *E.H. Schilling Landfill 5-Year*

*Review*, were the last comprehensive reports that were reviewed as part of this 5-Year Review. The reports include the most recent results from the site groundwater monitoring wells along with groundwater elevation data. In addition, surface water and landfill seep samples were collected and analyzed for VOCs, SVOCs, total metals, dissolved metals, total dissolved solids, and a list of major cations and anions.

Sampling was conducted quarterly from 1993 through 1996 and semi-annually since then. Analysis of the samples includes volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total metals, and pesticides. Table 1 includes all of the groundwater data collected to date. Blank cells in this table represent non-detect values. Note that some of the data shown in Table 1 are qualified with "J" values. The laboratory uses the "J" qualifier when reporting values to the method detection limit to indicate values that are between the reporting limit and the method detection limit. "J" values are therefore considered a laboratory estimate. For this analysis "J" values were considered as actual values.

Table 2 shows maximum concentrations for each constituent of interest (COI) from the wells that are located inside the landfill and Table 3 shows maximum concentrations for each COI from wells that are located outside the landfill. Also shown on these tables is a comparison of these maximum values to applicable U.S. EPA Drinking Water Standards (MCLs) and Health Advisories.

In evaluating the metals data in Table 1, it should be noted that all metals data collected during the annual groundwater sampling (1993 to the present) have been analyzed for total metals, as specified by the U.S. EPA. Dissolved metals data have apparently never been collected. As a result, interference from turbidity and suspended solids has likely influenced the data, making interpretation of the data difficult. However, for the purposes of this analysis, total metals data for the most recent sampling event (April 2002) were compared to the U.S. EPA drinking water standards in Table 4. The results of this comparison are discussed in the following sections.

*Wells Located Inside the Landfill*

Table 2 shows the maximum detected concentrations for each parameter from all the data collected to date from all the wells located inside the landfill. Table 2 also shows a comparison of these maximum concentrations to relevant the U.S. EPA criteria. As shown on this table, there are 15 parameters whose maximum concentrations from all data collected to date have shown an exceedance at one point from 1993 until 2002. These 15 parameters are:

- 1,1,2,2-Tetrachloroethane
- Trichloroethene

- 1,2-Dichloroethane
- Benzene
- Bromomethane
- Chloroform
- Chloromethane
- Ethylbenzene
- Methlylene chloride
- Benzo(a)pyrene
- Total beryllium
- Total cadmium
- Total chromium
- Total lead
- Total nickel

All of the exceedances, with the exception of benzo(a)pyrene and total lead, were collected from sampling events prior to the third quarter 1996. The maximum detected concentration for benzo(a)pyrene was detected in 2000 and total lead in 2002. Note that the maximum detected concentration for benzo(a)pyrene is 0.099 mg/L, which is greater than the solubility limit (0.0038 mg/L) for benzo(a)pyrene. Therefore, this value can be attributed to suspended solids in the sample. Table 5 shows a comparison of these 15 exceedances to the most recent groundwater data (April 2002). This comparison of the most recent site data indicates that there are currently seven parameters that exceed the U.S. EPA criteria. These parameters include:

- 1,2-Dichloroethene
- Benzene
- Ethylbenzene
- Methylene Chloride
- Benzo(a)pyrene
- Total lead
- Total nickel

As shown on Table 5, in all cases except for total lead, the concentrations have dropped significantly since the maximum values were detected. Again note the concentration for benzo(a)pyrene (0.019J mg/L) is greater than the solubility limit of 0.0038 mg/L as discussed above. Current concentrations for these five organic parameters range from 1.2 to 7.5 times their associated the U.S. EPA criteria (see Table 5, range excludes benzo(a)pyrene data). Current concentrations for the two total metals range from 2.06 to 14.6 times their associated the U.S. EPA criteria.

*Wells Located Outside the Landfill*

Table 3 shows the maximum detected concentrations for each parameter from all the data collected to date from all the wells located outside the landfill. Table 3 also shows a comparison of these maximum concentrations to relevant the U.S. EPA criteria. As shown on this table, there are 16 parameters, whose maximum concentrations from all data collected to data have shown an exceedance at one point from 1993 until 2002. These 16 parameters are:

- 1,1,2,2-Tetrachloroethane
- 1,2-Dichloroethane
- Benzene
- Carbon Tetrachloride
- Chloromethane
- Ethlybenzene
- Methylene chloride
- Benzo(a)pyrene
- Total antimony
- Total arsenic
- Total beryllium
- Total cadmium
- Total chromium
- Total copper
- Total lead
- Total nickel

All of the exceedances, with the exception of methylene chloride, were collected from sampling events prior to the second sampling event in 1998. The methylene chloride exceedence was collected in the 2000 sampling event. Table 6 shows a comparison of these 16 exceedances to the most recent groundwater data (April 2002). This comparison of the most recent data indicates that there are currently four parameters that exceed the U.S. EPA criteria. These parameters include:

- Methylene Chloride
- Total chromium
- Total lead
- Total nickel

As shown on Table 6, in all cases the concentrations have dropped significantly since the maximum values were detected. The current concentration for methylene chloride is 1.92 times its associated the U.S. EPA criteria. Current concentrations for the three total metals range from 3.55 to 16.1 times their associated criteria.

In addition to comparing maximum detected concentrations to the U.S. EPA standards, total VOCs and total SVOCs data for each well were plotted to evaluate any trends over time. VOCs and SVOCs data were totaled due to the large number of parameters that are analyzed for each sampling event and also due to the large number of non-detect values in the data (see Table 1). Non-detect values were considered zero for totaling purposes. For this analysis wells were divided into eight categories as follows:

- Extraction wells located inside the landfill
- Extraction well located outside the landfill
- Shallow topographically upgradient monitoring wells located outside the landfill
- Deep topographically upgradient monitoring wells located outside the landfill
- Shallow topographically downgradient monitoring wells located outside the landfill
- Deep topographically downgradient monitoring wells located outside the landfill
- Shallow monitoring well located inside the landfill
- Deep monitoring well located inside the landfill

Graphs of total VOCs and SVOCs data are included in Attachment A. Well locations are shown on Figure 2. The following sections discuss the results of this analysis.

It should be noted that total metals data were not plotted over time. Significant trends in total metals data are difficult to determine due to interference factors such as turbidity and suspended solids. It should also be noted that without dissolved metals data it is difficult to determine the potential migrations of metals in groundwater from one area of the landfill to another. The previously referenced Table 4 provides an analysis of current total metals data.

*Extraction Wells Inside Schilling Landfill*

Extraction wells EW-1, EW-2, and EW-3 are located inside the landfill. Graphs of total VOCs and total SVOCs concentrations over time are scattered but have been stabilizing and decreasing in recent years. In the case of total SVOCs, data from EW-1 and EW-2 have decreased to less than 1 mg/L since 1998. Current (April 2002) total metals data indicate that total nickel concentrations in EW-1 and total lead and total nickel concentrations in EW-3 are above the relevant the U.S. EPA criteria.

*Extraction Well Outside the Landfill*

Extraction well EW-4 is located outside and topographically downgradient of the landfill. Except for one early sampling event (September 1994), total VOCs concentrations are consistently below 0.015 mg/L, and have been below 0.1 mg/L since October 2000.

Total SVOCs data remain stable at or below 0.05 mg/L since May 1996. Current total metals data indicate that there are no exceedances in EW-4 of relevant the U.S. EPA criteria.

*Shallow Topographically Upgradient Monitoring Wells Outside Schilling Landfill*

Monitoring wells MW-1A, MW-2A, MW-3A, MW-4A, and MW-5A are shallow wells located outside and topographically upgradient of the landfill. Total VOCs and SVOCs data have stabilized at or near non-detect since 1996. Current total metals data indicate that total chromium and total lead concentrations in MW-3A are above relevant the U.S. EPA criteria.

MW-5A was not sampled after February 1996, when a landslide disabled the well. In addition MW-1A and MW-2A were never sampled because they were reportedly dry from the beginning of the sampling events.

*Deep Topographically Upgradient Monitoring Wells Outside Schilling Landfill*

MW-1B, MW-2B, MW-3B, MW-4B, and MW-5B are deep wells located outside and topographically upgradient of the landfill. Total VOCs data for these wells are very scattered and do not show any significant trends (increasing or decreasing) over time. Total VOCs data for these wells remain mostly below 0.05 mg/L. Total SVOCs data for these wells are show similar results, however remain mostly below 0.005 mg/L. Current total metals data indicate that there are no exceedances of relevant the U.S. EPA criteria in any of these wells.

Data for MW-1B were collected until May 1994, after which the well went dry. MW-5B was inoperable after February 1996 due to a landslide. Monitoring well MW-3B was never sampled because it was reportedly dry from the beginning of the sampling events.

*Shallow Topographically Downgradient Monitoring Outside Schilling Landfill*

MW-6A and 7A are shallow monitoring wells located topographically downgradient and outside of the landfill. Total VOCs concentrations have remained stable and very near non-detect until recent years where an increase in the concentrations appears. This spike is mainly influenced by carbon disulfide concentrations, which have increased in recent years. Spikes in carbon disulfide data have previously been attributed to laboratory error, which may be the case in these recent results. Total SVOCs data show no significant trends and except for three sampling rounds are below 0.01 mg/L. Current total metals data indicate that total chromium, total lead, and total nickel concentrations in MW-6A are above relevant the U.S. EPA criteria. Data from MW-7A were collected until May 1994 after which the well was reportedly dry.

*Deep Topographically Downgradient Monitoring Wells Outside Schilling Landfill*

MW-6B and MW-7B are deep monitoring wells located topographically downgradient and outside of the landfill. With the exception of two outlying data points in 1996, total VOCs concentrations have remained stable at or near non-detect concentrations. Total SVOCs data exhibit a similar trend with some outlying data points at the beginning of the sampling and then stable conditions near zero. Current total metals data indicate that total chromium, total lead, and total nickel concentrations in MW-6B are above the relevant U.S. EPA criteria.

*Shallow Monitoring Well Inside Schilling Landfill*

Shallow monitoring well MW-8A is located inside the landfill. Data for this well were not collected after 1994 because the well reportedly went dry at that time. There were no VOCs ever detected in this well. Total SVOCs data for this well are limited to data from four rounds and show no trends.

*Deep Monitoring Well Inside Schilling Landfill*

Deep well MW-8B is located inside the landfill. Data from this well have never been collected because the well was reportedly dry from the beginning of sampling.

*NPDES History*

Water treated and discharged at the landfill since 1993 has been regulated under the draft NPDES. Samples of effluent are collected prior to discharge and analyzed for VOCs, SVOCs, pesticides/PCBs, total metals, free cyanide, ammonia nitrogen, pH, TSS, BOD, and oil and grease. Historically the discharge has been in compliance with the exception of one exceedance recorded in March 1993, for oil and grease. As a result of this exceedance carbon filter units were changed out and no problems have been encountered since. Discussed below is the volume of water extracted to date and the volume of water treated and discharged to date.

*Volume of Water Extracted to Date*

Total volume of water extracted to date is as follows:

- 1993-285,033 gallons (note that no extraction volumes were recorded in 1993. Total gallons discharged in 1993 is used)
- 1994-396,907 gallons (extraction volumes only recorded starting in May 1994. Total gallons discharged in 1994 is used)
- 1995-452,938 gallons
- 1996-321,445 gallons
- 1997-252,195 gallons
- 1998-236,401 gallons
- 1999-156,612 gallons
- 2000-141,692 gallons
- 2001-125,290 gallons
- 2002-57,490 gallons (through June 2002)
- Total-2,426,255 gallons (through June 2002)

*Volume of Water Treated and Discharged to Date*

Water treated onsite is sampled prior to discharging to meet the NPDES limits. Volumes of water treated and discharged to date are as follows:

- 1993-285,033 gallons
- 1994-396,907 gallons
- 1995-429,428 gallons
- 1996-318,909 gallons
- 1997-249,988 gallons
- 1998-232,560 gallons
- 1999-153,564 gallons
- 2000-142,746 gallons
- 2001-91,684 gallons
- 2002-71,417 gallons (through June 2002)
- Total - 2,372,236 gallons (through June 2002)

Due to a decrease in the leachate flow rate in recent years, water is being treated and discharged on an as needed basis (usually bi-monthly).

Note that the extracted volume (2,426,255 gallons) is slightly larger than the discharged volume (2,372,236 gallons). The discrepancy is due to the fact that a check valve in EW-4 diverts water back into the landfill if the equalization tank is full. This caused some extracted water to be re-extracted at a later time.

*Seep Sampling*

Seep sampling was conducted on July 2, 2002, as requested by the U.S. EPA and OEPA. Also as requested by the agencies, the samples were analyzed at a lower detection limit, as is done for the groundwater sampling. A total of five seep samples were collected and analyzed for VOCs, SVOCs, total metals, dissolved metals, and several anions and cations. Field measurements of pH, temperature, and conductance were also taken along with analytical samples. Laboratory results revealed a only one seep sample had exceedances of enforceable U.S. EPA criteria for total and dissolved beryllium and total and dissolved nickel.

*48-Hour Well Recovery Information*

Water level data have been obtained from the four extraction wells on a monthly basis beginning in September 1994, through the present. Water levels in the extraction wells are measured after the well pumps have been shut down and the wells are allowed to recover for a 48-hour period. Attachment B contains a graph of extraction well water level drop over time. As shown on this figure the water level drop initially fluctuated but has stabilized in recent years, with the exception of EW-4. EW-4 has the greatest variance in water levels due primarily because it is outside the slurry wall and subject to seasonal variations and natural conditions. Additionally construction differences between EW-4 and the other extraction wells may cause some of the variance seen in EW-4.

Ground water level drops inside the landfill may be attributed to continuous pumping over the years, which has caused an initial dewatering of the water in the landfill. This initial dewatering should be followed by a somewhat steady state condition influenced slightly by seasonal variations in any potential upward seepage into the landfill. As shown on the graph water levels in recent years seem to be reaching that steady state condition with less of a drop from the previous year.

As part of the five-year review process, testing of the existing recovery wells is underway to assess fill saturation and to define the potential hydraulic interconnectivity of subsurface flow zones. The results of this study will be provided to the U.S. EPA and OEPA upon completion, as a separate deliverable. Because sealed caps were used to construct the monitoring wells, it is not possible to obtain water levels inside the landfill other then by using data from the extraction wells.

*Qualitative Flow Path Study*

On July 8, 2002 a qualitative flow path study was conducted on the landfill discharge and surface/seep drainage (Winkler Run) as it flows to the Ohio River. Figure 1 is a site layout map showing the flow of Winkler Run as it flows toward and eventually discharges to the Ohio River. The flow path study consisted of walking the length of the stream to map any tributaries that enter the stream and to take surface water flow measurements at several locations along the stream. The results of the study concluded that the stream follows the path as shown on the topographical (topo) map shown in Figure 1. Tributaries entering the stream are accurate as marked on the topo map. The only discrepancy is in the large pond shown in Figure 1 across the street from the Ohio Church. This pond no longer exists and there is only a smaller pool of water that gathers on either side of the culverts.

Surface water leaving the site flows down to the end of Winkler Run Road where it joins with surface run-off from the other side of the hill. Here the flow travels under US Route 52 via a 7ft diameter culvert that emerges on the other side of US 52 immediately before the railroad tracks that run on the southern side of US Route 52. This water then runs down the hill where another large culvert carries the water under the railroad tracks to an adjacent cornfield. The stream meanders through this cornfield and passes under Old US Route 52 again via a culvert. Once it passes under this road, the stream meanders through the fields and several private properties as shown on Figure 1. The area around the stream is heavily overgrown with brush and trees. Most of the stream is inaccessible due to the overgrowth. Eventually the stream passes through the Dow Chemical property where is discharges to the Ohio River.

Stream conditions the day of the study were extremely dry. The only water encountered was small pools that gathered near culverts where the stream would pass under roadways. There was no continuous flow at any point in the stream. All tributaries entering the main stream were totally dry. Attachment C shows several pictures of these stream conditions. At the point where the stream meets the Ohio River, water from the Ohio River was flowing into the stream channel. Due to the dry conditions, no flow measurements were taken during the study.

## Site Inspection

The inspection at the site was conducted on June 5, 2002. In attendance were the Mazin Enwiya, U.S. EPA; Linda Kern, U.S. EPA; Kris Vanecko, OEPA; Michael Sherron, OEPA; Scott McDougall, SMC/ARS Holdings; Andrzej Nazar, SMC; Matt Cairone, ARS Holdings; James Scherer, IMC; Jeremy Blevins, IMC. The purpose of the inspection was to assess the protectiveness of the remedy, including the presence of fencing to restrict access, the integrity of soil cover over the landfill, and general conditions of the site treatment systems.

The landfill cap over most of the site appeared to be in good condition and well vegetated. However, sparse vegetation was noted on the upper portion of the dam face. In addition, significant soil erosion was noted on the face of the dam. The erosion is most severe near EW-4. In some of the areas of erosion, the liner appeared to be visible.

## VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The review of various documents, ARARs, risk assumptions, and the results of the site inspection indicates that the on-site equipment is functioning as intended by the ROD.

Operation and maintenance of the extraction system has been effective, despite a drop in groundwater levels and extraction levels from the three landfill extraction wells. The reduction in water levels in the landfill are attributed to the hydraulic barriers (RCRA cap, grout curtain and slurry wall) combined with nine years of groundwater extraction. The hydraulic barriers are believed to be the primary contributors to the water level decline in the landfill, while pumping from landfill wells EW-1, EW-2 and EW-3 are considered to be of lessor significance, considering the relatively low extraction rates.

Concentrations of chemicals found in extraction wells EW-1, EW-2, and EW-3 appear to be scattered but stabilizing and decreasing in recent years for total VOCs and total SVOCs concentrations. In the case of total SVOCs, data from EW-1 and EW-2 have decreased to less than 1 mg/L since 1998. This indicates that a more cost-effective operating regime for the system may be possible and should be evaluated, however this does not effect the protectiveness of the remedy. This has greatly reduced the risks posed by potential migration of the contaminants to the groundwater and potential direct contact to the contaminated soils.

The PRPs are in the process of securing the services of a geotechnical engineer to evaluate the stability of the earthen berm as well as to recommend the means to address erosion of the embankment area. The initial tasks being considered for the review include:

- A review of the original remedial design stability calculations, construction quality control documentation, water level and boring log data,
- Conducting optional field activities to update relevant site information; this may include a survey, the installation of piezometers, additional recovery tests, and possible soil testing, if required,
- Analyzing the landfill embankment using stability models for critical cross sections,
- Re-assessment of the embankment stability under current conditions and alternate closure scenarios (>1.5 safety factor goal, per the 1989-ROD),
- Development and implementation of measures that may be needed to maintain the long-term integrity of the cap and embankment, if appropriate.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

During the on-site inspection conducted on June 5, 2002, U.S. EPA and OEPA personnel noted sparse vegetation on the upper portion of the dam face. In addition, significant soil erosion was noted on the face of the dam. The erosion is most severe near EW-4. In some of the areas of erosion, the liner appeared to be visible.

It was noted during the site visit that the erosion on the face of the dam was a serious issue that would potentially undermine the stability of the Recovery Well EW-4 and ultimately the dam itself. The PRPs have indicated in a recent correspondence to the U.S. EPA and OEPA that they are in the process of securing the services of a geotechnical engineer to evaluate the stability of the earthen berm as well as to recommend the means to address erosion of the embankment area.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Through the implementation of the remedy, including consolidation of the contaminated soils beneath a layer of clean soil, exposure routes have been effectively mitigated. However, during the June 5, 2002, site visit, significant soil erosion was noted on the face of the dam. The erosion is most severe near EW-4. In some of the areas of erosion, the liner appeared to be visible. There is no other information that calls into question the protectiveness of the remedy.

**Technical Assessment Summary**

Groundwater sampling data reveal that leachate and contaminated groundwater is not escaping capture. Some significant soil erosion was noted on the face of the dam. The erosion is most severe near EW-4. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedy.

## VIII. Issues

### Issues

| Issues | Affects Current Protectiveness (Y/N) | Affects Future Protectiveness (Y/N) |
|---|---|---|
| Optimization of the leachate and groundwater extraction system | N | N |
| Review dam design stability calculations | Y | Y |

## IX. Recommendations and Follow-up Actions

### Recommendations and Follow-up Actions

| Issue | Recommendations and Follow-up Actions | Party Responsible | Oversight Agency | Milestone Date | Affects Protectiveness (Y/N) | |
|---|---|---|---|---|---|---|
| | | | | | Current | Future |
| Non-optimal ground water extraction system | Complete optimization review of extraction system | PRP | EPA | 09/30/2003 | N | N |
| Review dam design stability calculations | Hire geotechnical engineer to perform this task | PRP | EPA | 09/30/2003 | Y | Y |
| Update site info | survey, installation of piezometers | PRP | EPA | 09/30/2003 | N | N |

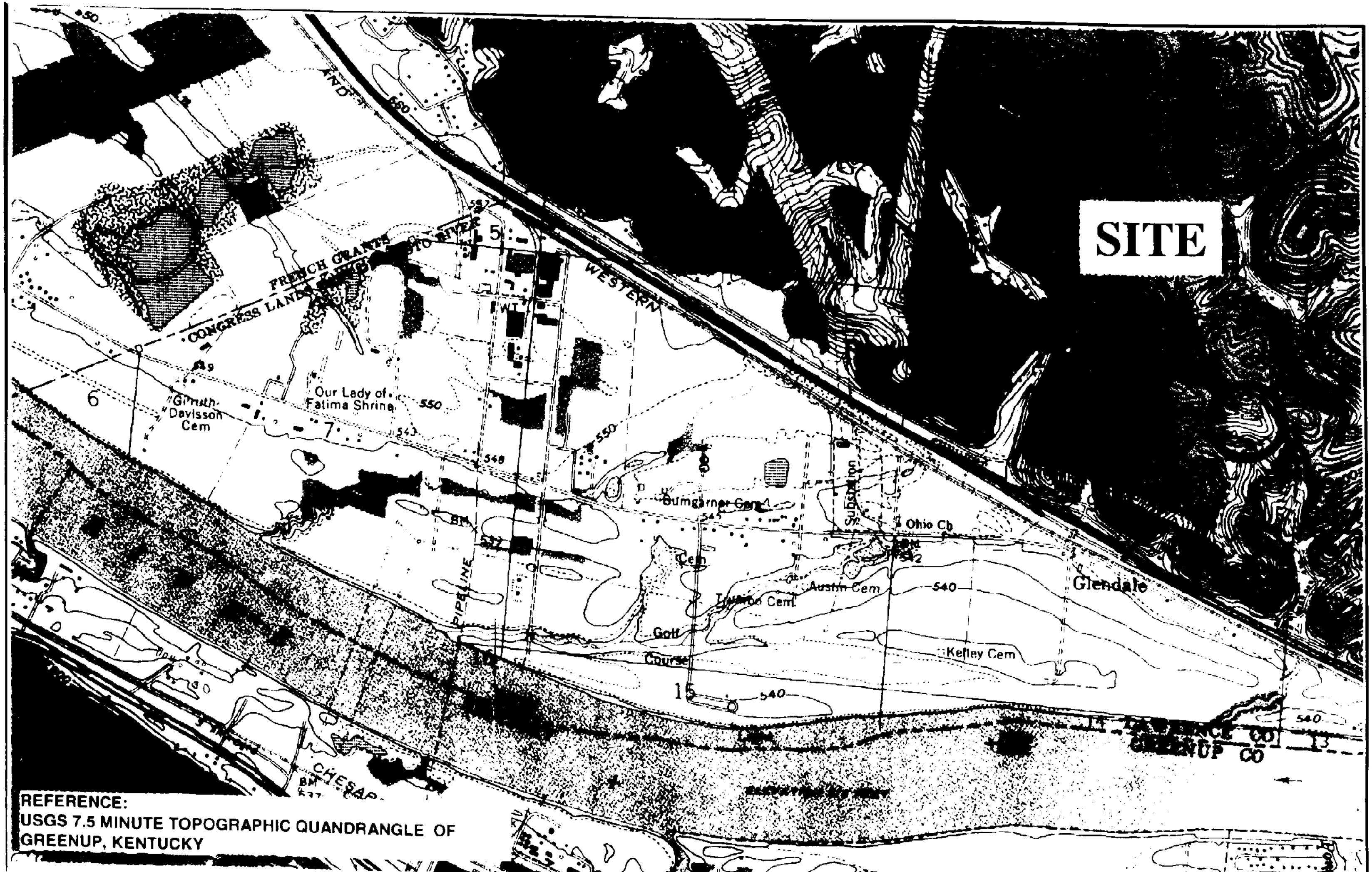
## X. Protectiveness Statement

The assessment of this five-year review has found the remedy to be protective of human health and the environment. Short term protectiveness has been achieved and exposures eliminated. Long-term protectiveness will be achieved when groundwater cleanup standards based on Safe Drinking Water Act MCLs, risk-based levels, and State of Ohio criteria for protection of groundwater quality are met, and by maintaining a deed restriction for the maintenance of a landfill cap to prevent unacceptable exposure.

## XI. Next Review

The next five-year review for the E. H. Schilling Landfill is required by September 30, 2007, five years from the date of this review.

# FIGURES



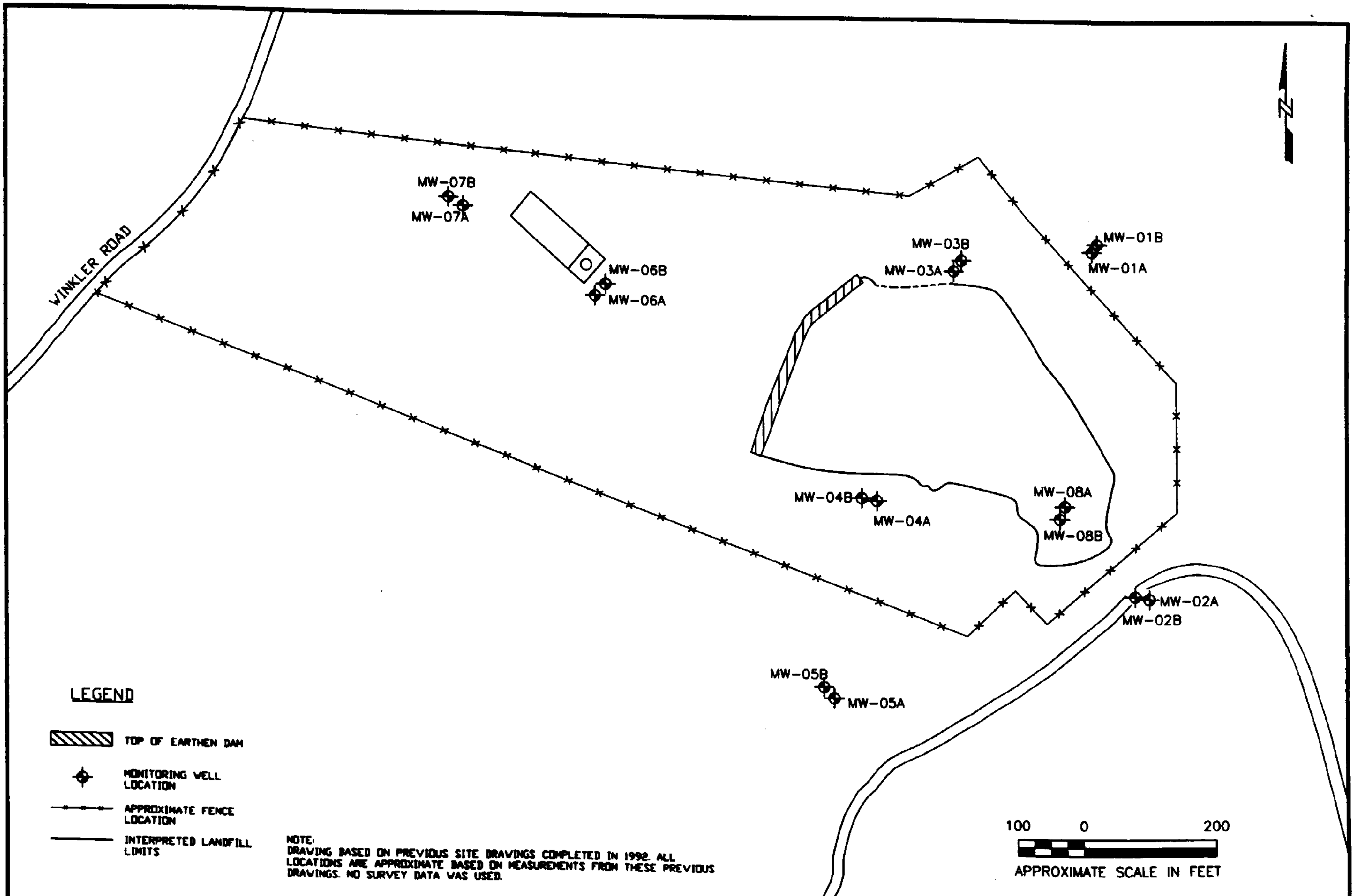

REFERENCE:
USGS 7.5 MINUTE TOPOGRAPHIC QUANDRANGLE OF
GREENUP, KENTUCKY

RETEC

1000 0 2000
APPROXIMATE SCALE IN FEET

E. H. SCHILLING LANDFILL
IRONTON, OHIO
ACC20-16050-000

**FIGURE 1**
**SITE LOCATION MAP**

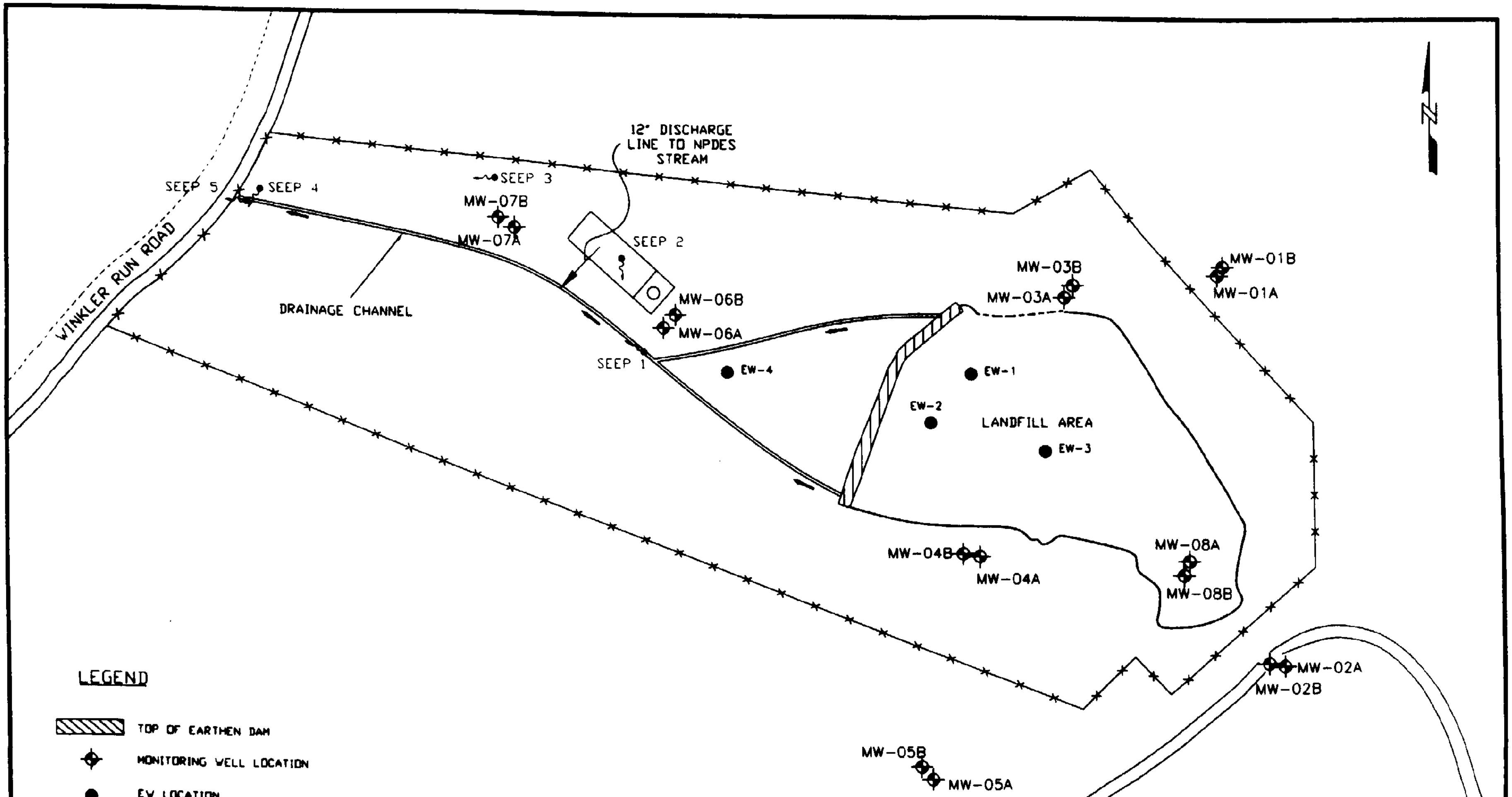



RETEC

E. H. SCHILLING LANDFILL
IRONTON, OHIO
ACC20-16050-000

FIGURE 2
SITE LAYOUT MAP

DATE: 07/16/02 | DRWN: DLS/PCH | FILE: FIGURE 2 | LAYOUT:




NOTES:
DRAWING BASED ON PREVIOUS SITE DRAWINGS COMPLETED IN 1992. ALL LOCATIONS ARE APPROXIMATE BASED ON MEASUREMENTS FROM THESE PREVIOUS DRAWINGS. NO SURVEY DATA WAS USED.

SEEP 1: LOCATED IN THE RIP-RAP DITCH THAT RUNS IN FRONT OF THE PROCESS BUILDING
SEEP 2: LOCATED INSIDE THE PROCESS BUILDING ON THE SOUTHEAST CORNER OF THE SBRA UNIT
SEEP 3: LOCATED ON THE HILLSIDE TO THE NORTH OF THE DRIVEWAY, APPROXIMATELY 70.33' FROM MW-7A
SEEP 4: LOCATED APPROXIMATELY 18' IN FROM WINKLER RUN ROAD, 18' FROM THE DRIVEWAY
SEEP 5: LOCATED 18' FURTHER DOWN THE ROAD FROM SEEP 4, APPROXIMATELY 7' FROM THE ROAD

RETEC

E. H. SCHILLING LANDFILL
IRONTON, OHIO
ACC20-16050-000

FIGURE 3
SEEP SAMPLE LOCATIONS

DATE: 07/22/02 | DRWN: DLS/PGH | FILE: FIGURE 1 | LAYOUT:

# TABLES

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Chemical | CAS No. | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | MW-3B (3/22/94) | MW-3A (3/22/94) | MW-6A (3/22/94) | MW-4B (3/22/94) | MW-7A (3/22/94) | MW-7B (3/22/94) | MW-5A (3/22/94) | MW-5B (3/22/94) | EW-1 (3/22/94) | EW-2 (3/22/94) | EW-3 (3/22/94) | EW-4 (3/22/94) | MW-1B (6/17/94) | MW-5A (6/17/94) | MW-5B (6/17/94) | MW-3B (6/17/94) | MW-3A (6/17/94) | MW-6A (6/17/94) |
| Sample Location | | MW-3B | MW-3A | MW-6A | MW-4B | MW-7A | MW-7B | MW-5A | MW-5B | EW-1 | EW-2 | EW-3 | EW-4 | MW-1B | MW-5A | MW-5B | MW-3B | MW-3A | MW-6A |
| Sample Date | | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 3/22/1994 | 6/17/1994 | 6/17/1994 | 6/17/1994 | 6/17/1994 | 6/17/1994 | 6/17/1994 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring |
| Area | | Outside | Outside | Inside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Outside | Inside |
| **VOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | | | | | 0.0034 | | | | | 0.006 | | | | | | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | | | | | | | | | | | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | | | | | | | | | | |
| Acetone | 67-64-1 | 0.084 | | | | | | | | | | | | | | 0.024 | 0.012 | 0.0098 | 0.0039 J |
| Benzene | 71-43-2 | | | | | | | | | | | | | | | | | | |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | | | | | | | | | | | | | | | 0.0007 J | 0.0006 J |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | | | | | | | | |
| Chloroethane | 75-00-3 | | | | | | | | | | | | | | | | | | |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | | | | | | | | |
| Ethylbenzene | 100-41-4 | | | | | | | | | 3 | 2 | 10 | | | | | | | |
| Methylene chloride | 75-09-2 | | 0.0017 | 0.0016 | 0.0017 | 0.0018 | | 0.0016 | | 0.28 | 0.23 | | | 0.0014 B,J | 0.001 B,J | 0.0012 B,J | 0.0022 B | 0.002 B | 0.0015 B,J |
| Styrene | 100-42-5 | | | | | | | | | | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | | | | | | | | | |
| Toluene | 108-88-3 | | | | 0.0006 J | 0.0008 J | | | | 0.078 J | 0.086 J | | | | | | | | |
| Xylene (total) | 1330-20-7 | | | | | | | | | 3 | 1 | 3 | | | | | | | |
| **SVOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | | | | | 0.16 | 0.18 | 0.52 | | | | | | | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | | | | | | | | | 0.0016 J | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | | | | | | | | |
| Phenol | 108-95-2 | | | | | | | 0.0024 J | | 0.071 | 0.056 | 0.31 | 0.012 | | | | | | |
| Pyrene | 129-00-0 | | | | | | | | | | | | | | | | | | |
| **Pesticides/PCBs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | | | 0.00034 | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | | | | | | | | | 0.0108 | | | | | | | |
| Beryllium | 7440-41-7 | | | | | | | | | | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | | | | | | | | 0.0067 | 0.0061 | 0.0076 |
| Chromium | 7440-47-3 | 0.0587 | 0.0312 | 0.0999 | 0.0213 | 0.0522 | | 0.045 | 0.0446 | 0.0101 | 0.0205 | 0.0206 | 0.0502 | 0.0596 | 0.091 | | 0.319 | 0.333 | 0.113 |
| Copper | 7440-50-8 | 0.1830 | 0.0267 | | | 0.1860 | | | | 0.0816 | | | 0.0404 | 0.0665 | | | 0.0319 | 0.0786 | 0.0264 |
| Cyanide, Total | 57-12-5 | | | | | | | | | | | | | | | | | | |
| Lead | 7439-92-1 | 0.235 | 0.0175 | | | 0.094 | | | 0.0039 | 0.058 | | 0.0067 | 0.396 | 0.0425 | 0.0039 | 0.0156 | 0.0088 | 0.012 | |
| Mercury | 7439-97-6 | | | | | | | | | | | | | | | | | | |
| Nickel | 7440-02-0 | 0.0473 | 0.0591 | 0.0609 | | 0.1800 | | | | | | | 0.0967 | 0.2290 | | | 0.0980 | 0.1210 | 0.0873 |
| Silver TR | 7440-22-4 | | | | | | | | | | | | | | | | | | |
| Zinc | 7440-66-6 | 0.0959 | 0.0786 | 0.0523 | 0.0512 | 0.131 | 0.0421 | 0.0361 | 0.058 | 0.0389 | 0.0204 | 0.0204 | 0.1 | 0.0442 | | | 0.0248 | 0.0344 | 0.0289 |

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Sample ID | | MW-1S (11/18/93) | MW-5S (11/18/93) | MW-5A (11/18/93) | MW-2S (11/18/93) | MW-3A (11/18/93) | MW-8A (11/18/93) | MW-4S (11/18/93) | MW-7S (11/18/93) | MW-7A (11/18/93) | MW-6A (11/18/93) | MW-6S (11/18/93) | EW-1 (11/18/93) | EW-2 (11/18/93) | EW-3 (11/18/93) | EW-4 (11/18/93) | MW-1S (3/22/94) | MW-5A (3/22/94) | MW-5S (3/22/94) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-1S | MW-5S | MW-5A | MW-2S | MW-3A | MW-8A | MW-4S | MW-7S | MW-7A | MW-6A | MW-6S | EW-1 | EW-2 | EW-3 | EW-4 | MW-1S | MW-5A | MW-5S |
| Sample Date | | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 11/18/1993 | 3/22/1994 | 3/22/1994 | 3/22/1994 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring |
| Area | | Outside | Outside | Outside | Outside | Outside | Inside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside |
| Chemical | CAS No. | | | | | | | | | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | 0.53 | 0.14 | 0.17 | 0.0078 | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | 0.042 J | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | | | | | | | | 0.0055 | | 0.092 J | | | 0.0067 | | | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | | 0.0075 J | | | | | | | | | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | | | | | | | | | | |
| Acetone | 67-64-1 | 0.0076 J | | 0.012 J | 0.045 J | 0.024 J | 0.0091 J | | 0.0083 J | 0.011 J | | | 0.92 J | | | | | 0.0033 | 0.013 |
| Benzene | 71-43-2 | | | | | | | | | | | | | | | | | | |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | | | | | | | | | | | | | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | | | | | | | | |
| Chloroethane | 75-00-3 | | | | | | | | | | | | | | | 0.048 | | | |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | | 0.11 J | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | | | | | | | | |
| Ethylbenzene | 100-41-4 | | | | | | | | | | | | 3 | 0.73 | 1 | | | | |
| Methylene chloride | 75-09-2 | 0.0029 J | 0.004 J | 0.0032 J | 0.0052 J | 0.0033 J | 0.0036 J | | | | | | | | | | | | 0.0021 |
| Styrene | 100-42-5 | | | | | | | | | | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | | | | | | | | | |
| Toluene | 108-88-3 | | 0.003 J | 0.0043 J | 0.015 | 0.0086 | | 0.0029 J | | | | 0.006 | 0.11 J | 0.046 J | | | | | 0.0006 J |
| Xylene (total) | 1330-20-7 | | | | | | | | | | | | | | | | | | |
| SVOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | | | | | | | | 0.0064 J | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | | | | | | | | 0.2 | 0.083 | 0.11 | | | | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | 0.24 | 0.039 J | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | | | | | | | | | | | | 0.0022 J | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | | | | | | | | |
| Phenol | 108-95-2 | | | | | 0.017 | | | | | 0.0039 J | | 0.087 | 0.046 | 0.12 | 0.018 | | | |
| Pyrene | 129-00-0 | | | | | | | | | | | | | | | | | | |
| Pesticides/PCBs (mg/L) | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | | | | | | | | | | |
| Metals (mg/L) | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | | | | | | | | | | | | 0.0107 | | | | |
| Beryllium | 7440-41-7 | | | | | | | | | | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | | | | | 0.0053 | 0.185 | 0.65 | | | |
| Chromium | 7440-47-3 | | | | 0.0668 | 0.0297 | 0.0159 | 0.0711 | | 0.278 | 0.0114 | 0.104 | | | 0.0112 | | | 3 | |
| Copper | 7440-50-8 | | | 0.0829 | | | | | | 0.846 | | | | | | | | | |
| Cyanide, Total | 57-12-5 | | | | | | | | | | | | | | | | | | |
| Lead | 7439-92-1 | 0.0038 | 0.0362 | 0.085 | 0.0135 | 0.004 | 0.003 | 0.0043 | 0.0222 | 0.865 | 0.0144 | 0.0093 | | | | 0.024 S | | 0.0059 | 0.0054 |
| Mercury | 7439-97-6 | | | | | | | | | | | | | | | | | | |
| Nickel | 7440-02-0 | | | | | | | 0.0486 | | 0.156 | | 0.0625 | | | | 0.0437 | | 0.0727 | |
| Silver TR | 7440-22-4 | | | | | | | | | | | | | | | | | | |
| Zinc | 7440-66-6 | | 0.0757 | 0.145 | 0.0559 | 0.0335 | 0.0811 | 0.0262 | | 0.651 | 0.0672 | | 0.0363 | | 0.122 | 0.0406 | | 0.154 | 0.0539 |

Table 1

**10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells**
**E.H. Schilling Landfill-Ironton, Ohio**

| Chemical | CAS No. | MW-4B (8/17/94) | MW-7B (8/17/94) | MW-7A (8/17/94) | MW-6B (8/17/94) | EW-1 (8/18/94) | EW-2 (8/18/94) | EW-3 (8/18/94) | EW-4 (8/18/94) | MW-6B (9/27/94) |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-4B | MW-7B | MW-7A | MW-6B | EW-1 | EW-2 | EW-3 | EW-4 | MW-6B |
| Sample Date | | 8/17/1994 | 8/17/1994 | 8/17/1994 | 8/17/1994 | 8/18/1994 | 8/18/1994 | 8/18/1994 | 8/18/1994 | 9/27/1994 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring |
| Area | | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside |
| **VOCs (mg/L)** | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | 0.0006 J | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | | | | | | | 0.0007 J | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | 0.0013 | | | | | | 0.0086 | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | |
| 2-Butanone | 78-93-3 | | 0.0007 J | | | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | |
| Acetone | 67-64-1 | 0.0054 | 0.077 | 0.067 | 0.0082 | 0.92 J | | | 0.013 | 0.03 |
| Benzene | 71-43-2 | | | | | | | | | |
| Bromomethane | 74-83-9 | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | 0.0007 J | | | | | | 0.0021 |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | |
| Chloroethane | 75-00-3 | | 0.0016 | | | | | | 0.0094 | |
| Chloroform | 67-66-3 | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | |
| Ethylbenzene | 100-41-4 | | 0.0081 | | | 3 | 0.8 | 4 | 0.0029 | |
| Methylene chloride | 75-09-2 | 0.0015 B,J | 0.0016 B,J | 0.0015 B,J | 0.0022 B | 0.4 B,J | 0.93 B | | 0.0024 B | |
| Styrene | 100-42-5 | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | |
| Toluene | 108-88-3 | | 0.0009 J | | | | | | | |
| Xylene (total) | 1330-20-7 | | 0.005 | | | 2 | | 3 | 0.0026 | |
| **SVOCs (mg/L)** | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | 0.0024 J | | 0.029 | 0.046 | 0.25 | | |
| Anthracene | 120-12-7 | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | 0.0041 J | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 0.013 | | | | | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | |
| Phenol | 108-95-2 | | | | | | 0.014 | 0.18 | 0.0095 | |
| Pyrene | 129-00-0 | | | | | | | | | |
| **Pesticides/PCBs (mg/L)** | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | 0.14 |
| Arsenic TR | 7440-38-2 | | | | | | | 0.0122 | | 0.0152 |
| Beryllium | 7440-41-7 | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | 0.0306 |
| Chromium | 7440-47-3 | 0.0737 | | 0.152 | 0.614 | | | 0.013 | | 0.666 |
| Copper | 7440-50-8 | 0.0327 | 0.0250 | 0.1830 | 0.0368 | | | | | 0.3320 |
| Cyanide, Total | 57-12-5 | | | | | | | | | |
| Lead | 7439-92-1 | | | 0.192 | 0.0178 | | | | 0.0203 | 0.0897 |
| Mercury | 7439-97-6 | | | | | | | | | |
| Nickel | 7440-02-0 | | 0.0671 | 0.1830 | 0.2330 | | | | | 0.3570 |
| Silver TR | 7440-22-4 | | | | | | | | | |
| Zinc | 7440-66-6 | 0.0278 | | 0.173 | 0.0359 | | 0.022 | | 0.0207 | 0.106 |

| Chemical | CAS No. | MW-3A (9/27/94) | MW-5A (9/27/94) | MW-4B (9/27/94) | MW-7B (9/27/94) | EW-1 (9/28/94) | EW-2 (9/28/94) | EW-3 (9/28/94) | EW-4 (9/28/94) | MW-8B (12/14/94) |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-3A | MW-5A | MW-4B | MW-7B | EW-1 | EW-2 | EW-3 | EW-4 | MW-8B |
| Sample Date | | 9/27/1994 | 9/27/1994 | 9/27/1994 | 9/27/1994 | 9/28/1994 | 9/28/1994 | 9/28/1994 | 9/28/1994 | 12/14/1994 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring |
| Area | | Outside | Inside | Outside | Outside | Inside | Inside | Inside | Outside | Outside |
| **VOCs (mg/L)** | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.03 | | 0.0091 | | | | | | |
| 1,1-Dichloroethane | 75-34-3 | 0.006 | | | 0.0006 J | | | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | | 0.0066 | 0.082 J | | | 0.0084 | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | 0.0077 | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | 0.0042 J | | | | | |
| Acetone | 67-64-1 | 0.063 | 0.0086 | 0.0044 J | 0.051 | 0.69 J | 0.23 | | 0.028 J | 0.022 |
| Benzene | 71-43-2 | | | | | | | | | |
| Bromomethane | 74-83-9 | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | 0.0015 | 0.0009 J | | | | | 0.01 | |
| Carbon tetrachloride | 56-23-5 | 0.031 | | 0.0092 | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | |
| Chloroethane | 75-00-3 | | | | 0.0064 | 0.5 | | | 0.047 | |
| Chloroform | 67-66-3 | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | 0.01 J | 0.15 J | 0.12 | 0.002 |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | |
| Ethylbenzene | 100-41-4 | | | | 0.02 | 4 | 0.36 | 4 | 0.042 | |
| Methylene chloride | 75-09-2 | | | | 0.0014 | | | | | |
| Styrene | 100-42-5 | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | |
| Toluene | 108-88-3 | | | | | 0.13 | | | | 0.0006 J |
| Xylene (total) | 1330-20-7 | | | | | | | | | |
| **SVOCs (mg/L)** | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | 0.0042 J | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | 0.0068 | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | 0.0018 J | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | 0.0026 J | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | 0.056 | 0.0018 J | 0.044 | | |
| Anthracene | 120-12-7 | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | 0.0031 J | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | |
| Isophorone | 78-59-1 | | | | 0.0018 J | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | 0.0018 J | | |
| Phenol | 108-95-2 | 0.001 J | | | 0.057 | 0.036 | 0.036 | 0.12 | 0.08 | |
| Pyrene | 129-00-0 | | | | | | | | | |
| **Pesticides/PCBs (mg/L)** | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | | | | 0.0174 | 0.0108 | 0.0389 | |
| Beryllium | 7440-41-7 | | | | | | | | | |
| Cadmium | 7440-43-9 | 0.0091 | 0.0106 | | | | 0.0057 | | | |
| Chromium | 7440-47-3 | 0.21 | 0.0591 | 0.0121 | | | | 0.0106 | | 0.102 |
| Copper | 7440-50-8 | 0.0263 | 0.0905 | | 0.0433 | | | | | 0.0400 |
| Cyanide, Total | 57-12-5 | | | | | | | | | |
| Lead | 7439-92-1 | 0.006 | 0.0222 | | | | | | | 0.0424 |
| Mercury | 7439-97-6 | | | | | | | | | |
| Nickel | 7440-02-0 | 0.0800 | 0.1060 | | | | | | | 0.0486 |
| Silver TR | 7440-22-4 | | | | | | | | | |
| Zinc | 7440-66-6 | 0.0213 | 0.0635 | | 0.0436 | 0.0281 | 0.0278 | | 0.0228 | 0.0423 |

Table 1

**10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells**
**E.H. Schilling Landfill-Ironton, Ohio**

| Chemical | CAS No. | MW-5A (12/14/94) MW-5A 12/14/1994 Investigation Monitoring Outside | MW-6A (12/14/94) MW-6A 12/14/1994 Investigation Monitoring Inside | MW-4B (12/14/94) MW-4B 12/14/1994 Investigation Monitoring Outside | MW-7B (12/14/94) MW-7B 12/14/1994 Investigation Monitoring Outside | MW-4A (12/14/94) MW-4A 12/14/1994 Investigation Monitoring Outside | MW-5B (12/14/94) MW-5B 12/14/1994 Investigation Monitoring Outside | EW-1 (12/14/94) EW-1 12/14/1994 Investigation Extraction Inside | EW-2 (12/14/94) EW-2 12/14/1994 Investigation Extraction Inside | EW-3 (12/14/94) EW-3 12/14/1994 Investigation Extraction Inside | EW-4 (12/14/94) EW-4 12/14/1994 Investigation Extraction Outside | MW-5B (3/15/95) MW-5B 3/15/1995 Investigation Monitoring Outside | MW-6A (3/15/95) MW-6A 3/15/1995 Investigation Monitoring Outside | MW-6B (3/15/95) MW-6B 3/15/1995 Investigation Monitoring Outside | MW-5A (3/15/95) MW-5A 3/15/1995 Investigation Monitoring Outside | MW-4B (3/16/95) MW-4B 3/16/1995 Investigation Monitoring Outside | MW-7B (3/16/95) MW-7B 3/16/1995 Investigation Monitoring Outside | MW-4A (3/15/95) MW-4A 3/15/1995 Investigation Monitoring Outside | MW-8B (3/15/95) MW-8B 3/15/1995 Investigation Monitoring Outside |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | | | 0.0006 J | | | | | 0.0046 | 0.093 | 0.0001 J | 0.0002 J | 0.0002 J | | | 0.0012 |
| 1,1-Dichloroethane | 75-34-3 | | | | | | | | | | | 0.0004 J | | | | | 0.0003 J | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | | | 0.0084 | | | | | 0.0052 | | | | | | 0.0034 | | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | | | | | | | | | | | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | | | | | | | | 0.0017 J | | |
| Acetone | 67-64-1 | 0.036 | 0.0034 | | | 0.0023 | 0.0036 | | | | | | | | | | 0.033 | | |
| Benzene | 71-43-2 | | | | | | | | | | | 0.0004 J | | 0.0005 J | 0.0008 J | 0.0014 | 0.0004 J | | 0.0009 J |
| Bromomethane | 74-83-9 | 0.0029 | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | | | | | | | | | | | | 0.0001 J | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | | | | | | | | |
| Chloroethane | 75-00-3 | | | | | 0.031 | 0.0011 | | | | 0.039 | | | | | | | | |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | 0.0013 | | 0.0019 | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | | | | | | | | |
| Ethylbenzene | 100-41-4 | | | | | | | 1 | 2 | 11 | | | | 0.0002 J | | | 0.0013 | | |
| Methylene chloride | 75-09-2 | | | | | 0.001 | 0.0003 J | | | | | 0.0002 J | | 0.0002 J | 0.0003 J | 0.0006 J | 0.0011 | | 0.0003 J |
| Styrene | 100-42-5 | | | | | | | | | | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | | | | | | | | | |
| Toluene | 108-88-3 | | | | | | | | | | | 0.0004 J | | 0.0019 | 0.0002 J | 0.0004 J | | | 0.0002 J |
| Xylene (total) | 1330-20-7 | | | | | | | | | | | | | 0.0026 | | | | | |
| **SVOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | | | 0.0048 J | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | 0.0022 J | | |
| 4-Methylphenol | 106-44-5 | | | | | | | 0.038 | 0.048 | 0.67 | | | | | | | 0.0017 J | | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | | | 0.002 J | | 0.0014 J | | | 0.0016 J | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | 0.0016 J | | 0.0011 J | | | 0.0014 J | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | | | 0.0021 J | | 0.0012 J | | | 0.0015 J | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | 0.0011 J | | | | | 0.0014 J | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | 0.0019 J | | 0.0014 J | | | 0.0014 J | | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | 0.0058 J | 0.004 J | | 0.0026 J | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | | | | | | 0.0027 B,J | 0.0056 B | 0.0022 B,J | | | 0.0022 B,J | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | 0.0026 B,J | | 0.0018 B,J | | | 0.0024 B,J | | |
| Carbazole | 86-74-8 | | | | | | | | | | | 0.002 J | | 0.0018 J | | | 0.001[illegible] J | | |
| Chrysene | 218-01-9 | | | | | | | | | | | 0.0016 J | | 0.001 J | | | 0.001[illegible] J | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | 0.0016 J | | 0.001 J | | | 0.001 | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | 0.01 | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | | | 0.0026 B,J | | 0.0025 B,J | | | 0.0018 B,J | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | 0.0015 J | | | | | 0.0016 J | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | 0.002 J | | 0.0016 J | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | 0.0015 J | | | | | 0.0018 J | | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | | | | | 0.0012 J | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | | | | | | | | |
| Phenol | 108-95-2 | 0.0013 J | | | 0.0012 J | 0.0072 | 0.002 J | 0.027 | 0.034 | 0.21 | 0.025 | | | 0.0018 J | 0.0014 J | 0.0018 J | 0.0059 | 0.0034 J | |
| Pyrene | 129-00-0 | | | | | | | | | | | 0.0019 J | | 0.0015 J | | | 0.0018 J | | |
| **Pesticides/PCBs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-8 | | | | | | | | | | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | | | | | | | | 0.0219 | | | | | | | 0.0118 | |
| Beryllium | 7440-41-7 | | 0.0053 | | | | | | | | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | | | | | | | | | | |
| Chromium | 7440-47-3 | 0.262 | 0.0849 | 0.0674 | | 0.0366 | 0.0336 | | | 0.0179 | 0.0166 | 0.0526 | 0.025 | 0.0349 | 0.0606 | 0.0416 | | 0.0192 | 0.0633 |
| Copper | 7440-50-8 | 0.0369 | 0.0715 | 0.0434 | 0.0542 | 0.1180 | 0.0286 | | | | 0.0709 | 0.0344 | 0.0630 | 0.1480 | | 0.0646 | 0.0359 | 0.0775 | 1.0000 |
| Cyanide, Total | 57-12-5 | | | | | | | | | | | | | | | | | | |
| Lead | 7439-92-1 | 0.0161 | 0.0127 | 0.0071 | 0.0751 | 0.132 | 0.0116 | | | | 0.0327 | 0.0323 | 0.0816 | 0.352 | 0.0277 | 0.0632 | | 0.241 | 0.447 |
| Mercury | 7439-97-6 | | | 0.00066 | | | 0.00056 | | | | | | | | | | | | |
| Nickel | 7440-02-0 | 0.1280 | 0.1820 | 0.0815 | 0.0622 | 0.8630 | | | | | 0.1460 | | 0.2120 | | 0.0634 | 0.8630 | 0.2130 | 2.6600 | 0.0843 |
| Silver TR | 7440-22-4 | | | | | | | | | | | | | | | | | | |
| Zinc | 7440-66-6 | 0.0358 | 0.07 | | 0.0353 | 0.117 | 0.0241 | | | 0.0219 | 0.111 | | 0.0546 | 0.0866 | | 0.239 | 0.073 | 0.247 | 0.462 |

**Table 1**

**10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells**
**E.H. Schilling Landfill-Ironton, Ohio**

| Sample ID | | EW-1 (3/18/96) | EW-2 (3/18/96) | EW-3 (3/18/96) | EW-4 (3/18/96) | MW-5B (5/22/96) | MW-5A (5/22/96) | MW-6B (5/22/96) | MW-3A (5/22/96) | MW-4B (5/22/96) | MW-7B (5/22/96) | MW-6A (5/23/96) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | EW-1 | EW-2 | EW-3 | EW-4 | MW-5B | MW-5A | MW-6B | MW-3A | MW-4B | MW-7B | MW-6A |
| Sample Date | | 3/18/1996 | 3/18/1996 | 3/18/1996 | 3/18/1996 | 5/22/1996 | 5/22/1996 | 5/22/1996 | 5/22/1996 | 5/22/1996 | 5/22/1996 | 5/22/1996 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring |
| Area | | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Outside | Outside | Outside |
| Chemical | CAS No. | | | | | | | | | | | |
| **VOCs (mg/L)** | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | | 0.0081 | 0.0012 | 0.011 | | | | |
| 1,1-Dichloroethane | 75-34-3 | | | | | 0.0009 J | | | | | 0.0011 | 0.0007 J |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | 0.75 | | | 0.0058 | | | | | | | 0.0024 |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | 0.28 | 1.5 | | | 0.002 | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | | | |
| Acetone | 67-64-1 | 0.54 | 0.16 | 1.8 | 0.035 | 0.007 | 0.015 | 0.0069 | 0.014 | 0.0037 | 0.0021 | |
| Benzene | 71-43-2 | | | | | | | | | | | |
| Bromomethane | 74-83-9 | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | | | | | | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | 0.0011 | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | |
| Chloroethane | 75-00-3 | 0.75 | | | 0.052 | | | | | | 0.0012 | 0.01 |
| Chloroform | 67-66-3 | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | |
| Ethylbenzene | 100-41-4 | 1 | 0.98 | 1.2 | | | | | | | | |
| Methylene chloride | 75-09-2 | 0.37 | | | | | | | | | | |
| Styrene | 100-42-5 | | | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | | |
| Toluene | 108-88-3 | 0.23 | 0.047 | | | | | 0.0009 J | | | | |
| Xylene (total) | 1330-20-7 | | | | 0.053 | | | 0.0026 | | | | |
| **SVOCs (mg/L)** | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | 0.00086 J | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | 0.009 J | | | | | | |
| 2-Methylphenol | 95-48-7 | 0.0032 J | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | 0.029 | 0.039 | 0.75 | | | | | | | | |
| Anthracene | 120-12-7 | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | 0.0012 J | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | 0.0011 J | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | 3 | | | 0.0091 J | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | 0.0034 J |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 0.0026 B,J | 0.0041 B,J | | 0.002 B,J | 0.00086 J | | 0.0012 J | 0.0031 J | | 0.00067 J | 0.0024 J |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | 0.0013 B,J | 0.002 B,J | | | | | | | | | |
| Carbazole | 86-74-8 | 0.0015 J | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | 0.0056 | 0.0012 J | | 0.00068 J | | | 0.0014 J |
| Di-n-butyl phthalate | 84-74-2 | | 0.0011 B,J | | | | | | | | | 0.00068 J |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | |
| Phenol | 108-95-2 | 0.0078 | 0.011 | | 0.037 | | | | | | 0.0031 J | |
| Pyrene | 129-00-0 | 0.0012 J | 0.0015 J | | | | | | | | | |
| **Pesticides/PCBs (mg/L)** | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | |
| delta-BHC | 319-86-7 | 0.000071 | | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | 0.016 | 0.028 | | | | | | | |
| Beryllium | 7440-41-7 | | | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | | | |
| Chromium | 7440-47-3 | | 0.0254 | 1.2 | 0.0105 | 0.0448 | 0.0548 | 0.0621 | 0.105 | 0.0419 | | 0.0312 |
| Copper | 7440-50-8 | | 0.0337 | 0.0470 | 0.0891 | 0.0422 | | 0.1830 | 0.1930 | 0.0307 | 0.4840 | |
| Cyanide, Total | 57-12-5 | | | 0.0130 | | | | | | | | |
| Lead | 7439-92-1 | | 0.0054 | | 0.0491 | 0.0597 | 0.006 | 1 | 0.332 | 0.0445 | 0.171 | 0.0082 |
| Mercury | 7439-97-6 | | | | | | | | | | | |
| Nickel | 7440-02-0 | | 0.1660 | 0.8450 | 0.1860 | | | 0.1330 | 0.4470 | 0.1410 | 3.3400 | 0.0430 |
| Silver TR | 7440-22-4 | | | | | | | | | | | |
| Zinc | 7440-66-6 | | 0.0431 | 0.102 | 0.113 | 0.0273 | 0.0295 | 0.188 | 0.165 | 0.0854 | 0.857 | 0.0882 |

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Sample ID | | MW-5B (5/23/96) | EW-1 (5/23/96) | EW-2 (5/23/96) | EW-3 (5/23/96) | EW-4 (5/23/96) | MW-5B (8/17/98) | MW-6A (8/17/98) | MW-6B (8/17/98) | MW-3A (8/17/98) | MW-4B (8/17/98) | MW-4A (8/17/98) | MW-3B (8/17/98) | MW-7B (8/17/98) | EW-1 (8/17/98) | EW-2 (8/17/98) | EW-3 (8/17/98) | EW-4 (8/17/98) | MW-6A (11/8/95) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-5B | EW-1 | EW-2 | EW-3 | EW-4 | MW-5B | MW-6A | MW-6B | MW-3A | MW-4B | MW-4A | MW-3B | MW-7B | EW-1 | EW-2 | EW-3 | EW-4 | MW-6A |
| Sample Date | | 5/23/1996 | 5/23/1996 | 5/23/1996 | 5/23/1996 | 5/23/1996 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 8/17/1998 | 11/8/1995 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring |
| Area | | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside |
| Chemical | CAS No. | | | | | | | | | | | | | | | | | | |
| **VOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.0036 | | | | | | 0.0003 J | | | | | 0.0032 | | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | | | | | 0.001 | | | | | 0.0006 J | | 0.0004 J | 0.011 J | | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | 0.06 | | | 0.005 | | | | | | 0.0037 | | 0.0051 | 0.082 | | | 0.0086 | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | | | 0.002 | 0.0016 | | | | | | 0.0009 J | 0.017 J | | 0.13 J | 0.0021 J | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | | | | | | | | | | |
| Acetone | 67-64-1 | | 0.06 J | | 1.5 J | 0.019 J | 0.021 | 0.04 | 0.036 | 0.01 | 0.0018 | 0.01 | 0.0078 | 0.0069 | 0.081 J | 0.16 J | 2 J | 0.081 J | 0.34 B |
| Benzene | 71-43-2 | | | | | | 0.0003 J | | | | | | | | 0.01 J | | | 0.0088 | |
| Bromomethane | 74-83-9 | | | 0.045 J | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | | | | | 0.0003 J | 0.0026 | | | 0.0006 J | | | | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | | | | | | | | |
| Chloroethane | 75-00-3 | | 0.069 J | | | 0.057 | 0.0003 J | | | | | 0.015 | | 0.0051 | 0.11 | 0.026 J | | 0.073 | |
| Chloroform | 67-66-3 | | | 0.026 J | 0.22 J | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | 0.0027 J | | | | | 0.0005 J | | | | | | | | 0.003 J |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | | | | | | | | |
| Ethylbenzene | 100-41-4 | | 1 | 2 | 6 | | 0.0006 J | | | | | | | | 1 | 2 | 11 | 0.0014 J | |
| Methylene chloride | 75-09-2 | | 0.039 J | 0.032 J | | 0.0027 J | 0.0005 J | 0.0004 J | 0.0006 J | 0.0002 J | 0.0002 J | 0.0006 J | 0.0002 J | 0.0 | 0.041 J | 0.011 J | 0.11 J | 0.0021 J | |
| Styrene | 100-42-5 | | | | | | 0.001 | | 0.0012 J | | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | 0.0009 J | | | | | | | | | | | | |
| Toluene | 108-88-3 | | 0.023 J | 0.058 J | | | 0.0015 | | 0.0014 J | | | 0.0002 J | | | 0.017 J | 0.046 J | 0.11 J | | |
| Xylene (total) | 1330-20-7 | | | 0.074 J | | | 0.0027 | | | 0.0002 J | | | | | | | | | |
| **SVOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | 0.081 | 0.024 | 0.13 J | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | 0.0032 J | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | 0.0019 J | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | 0.034 | 0.086 | 1.4 | | | | | 0.0019 J | | | | | 0.046 | 0.07 | 0.73 | | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | 2 | | | | | | | | | | | | 5 | | |
| Benzyl alcohol | 100-51-6 | | 0.0046 J | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 0.0011 J | 0.0016 J | | | 0.0011 J | 0.0011 B,J | 0.002 B,J | 0.0011 B,J | 0.0007 B,J | | | | | 0.0014 B,J | | | | 0.007 B |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | 0.044 J | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | 0.0006 J | 0.0007 J | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | | | | | | | | |
| Phenol | 108-95-2 | | 0.032 | 0.038 | 0.37 | 0.035 | | 0.0016 J | | 0.0033 J | | 0.0092 | | 0.0042 J | 0.051 | 0.06 | 0.67 | 0.1 | |
| Pyrene | 129-00-0 | | | | | | | | | | | | | | | | 0.046 J | | |
| **Pesticides/PCBs** | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-85-7 | | | | | | | | | | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | | | | | | | | | | | | | | | | |
| Beryllium | 7440-41-7 | | | | | | | | | | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | | | | | | | | | | |
| Chromium | 7440-47-3 | 0.0178 | | | 0.217 | | 0.0365 | 0.127 | | 0.0325 | 0.0153 | 0.0108 | 0.0187 | | | | | | 0 |
| Copper | 7440-50-8 | 0.2120 | | | | | 0.0566 | 0.152 | | 0.0378 | | | 0.0562 | | | | | 0.0804 | 0.0452 |
| Cyanide, Total | 57-12-5 | | | | | | | | | | | | | | | | 0.013 | | |
| Lead | 7439-92-1 | 0.0815 | | | 0.0186 | | 0.0942 | 0.0301 | 0.016 | 0.0463 | 0.013 | | 0.0152 | | | 0.0066 | 0.0032 | 0.0196 | 0.0156 |
| Mercury | 7439-97-6 | | | | | | | | | | | | | | | | | | |
| Nickel | 7440-02-0 | | | | 0.138 | | | 0.117 | | 0.0567 | | | | | | | | | 0.0798 |
| Silver TR | 7440-22-4 | | | | | | | | | | | | | | | | | | |
| Zinc | 7440-66-6 | 0.0426 | 0.0270 | | 0.021 | | 0.0401 | 0.254 | | 0.033 | 0.0287 | 0.0414 | 0.0407 | | 0.0307 | 0.022 | | 0.0654 | 0.0586 |

Table 1 10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Sample ID | | MW-5B (11/96) | MW-2B (11/96) | MW-3A (11/96) | MW-4B (11/96) | MW-7B (11/96) | MW-6A (11/96) | MW-6B (11/96) | EW-1 (11/96) | EW-2 (11/96) | EW-3 (11/96) | EW-4 (11/96) | MW-5A (3/21/96) | MW-5B (3/21/96) | MW-2B (3/21/96) | MW-3A (3/21/96) | MW-4B (3/21/96) | MW-7B (3/21/96) | MW-6A (3/21/96) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-5B | MW-2B | MW-3A | MW-4B | MW-7B | MW-6A | MW-6B | EW-1 | EW-2 | EW-3 | EW-4 | MW-5A | MW-5B | MW-2B | MW-3A | MW-4B | MW-7B | MW-6A |
| Sample Date | | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 11/8/1996 | 3/21/1996 | 3/21/1996 | 3/21/1996 | 3/21/1996 | 3/21/1996 | 3/21/1996 | 3/21/1996 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring |
| Area | | Outside | Outside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Outside | Outside | Outside |
| Chemical | CAS No. | | | | | | | | | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.0002 J | | 0.0003 J | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | 0.0003 J | | | | | 0.0003 J | | | | | | | 0.00064 | | | | |
| 1,1-Dichloroethane | 75-34-3 | | 0.0012 | | | | | | | | | | | | 0.0011 | | | | 0.0006 J |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | | | 0.04 J | 0.0047 | | 0.057 | 0.01 J | | 0.0048 J | | | | | | 0.018 J | 0.00094 J |
| 1,1,2-Trichloroethane | 79-00-5 | 0.0002 J | | 0.0002 J | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | 0.0008 J | 0.001 J | | | | | | | 0.06 J | | | | | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | 0.008 J | | | | | | | | | |
| Acetone | 67-64-1 | 0.013 B | 0.015 | 0.0097 J | 0.16 B | 0.31 B,J | 0.01 B | 0.013 | 0.048 J | 0.14 J | 1.7 B,J | 0.018 J | | 0.0074 J | 0.018 J | | | | |
| Benzene | 71-43-2 | 0.0002 J | 0.0002 J | | | | | | | | | | | | | | | | |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | 0.0011 | | | | | | | | | | | | | | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | | | | | | | | |
| Chloroethane | 75-00-3 | | 0.0002 J | | | 0.07 J | 0.018 | | 0.084 J | 0.034 J | | 0.06 | | | | | | | |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | 0.02 J | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | | | | | | | | |
| Ethylbenzene | 100-41-4 | 0.0004 | 0.0004 J | | | 3 | 0.0003 J | 0.001 | 0.82 | 0.94 | 11 | 0.0019 J | | | 0.00051 J | | | 0.56 | |
| Methylene chloride | 75-09-2 | | 0.0004 B,J | 0.0003 B,J | 0.002 B,J | 0.05 B,J | 0.0008 B,J | | 0.029 J | 0.007 J | | 0.0017 J | | | | | | | |
| Styrene | 100-42-5 | 0.0022 | 0.0007 J | | | | | | | | | | | 0.00075 J | 0.00073 J | | | | |
| Tetrachloroethene | 127-18-4 | | 0.0005 J | | | | | | | | | | | | 0.00057 J | | | | |
| Toluene | 108-88-3 | 0.0013 | 0.0008 J | | | 0.05 J | 0.0009 J | | 0.022 J | 0.059 | | | | 0.00065 J | 0.00087 J | | | | |
| Xylene (total) | 1330-20-7 | 0.0011 | | 0.0004 J | | | 0.0013 | 0.0002 J | | | | | | | 0.0017 J | | | | |
| SVOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | 0.0019 J | | | | |
| 2-Methylphenol | 95-48-7 | | | | | 0.003 J | | | 0.0028 J | 0.0024 J | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | 0.21 | | | 0.014 | 0.083 | 2 | | | | | | | 0.0082 J | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | 0.00076 J | | | | | | | 0.0026 J | | 0.0013 J | | | |
| Benzyl alcohol | 100-51-6 | | | | | 0.0018 J | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 0.0044 B,J | 0.0046 B,J | 0.0037 B,J | 0.0041 B,J | 0.012 B,J | 0.0038 B,J | 0.0011 B,J | | 0.0011 J | | | 0.0027 B,J | | | | 0.0016 B,J | | 0.0013 B,J |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | 0.0005 B,J | | | | 0.0015 B,J | | 0.00084 B,J | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | 0.0017 J | | | | | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | | | | | | | | |
| Phenol | 108-95-2 | 0.0019 J | | 0.00054 J | | 0.12 | 0.0081 | | 0.053 | 0.066 | 0.52 | 0.074 | | | | | | 0.071 | 0.003 J |
| Pyrene | 129-00-0 | | | | | | | | | | | | | | | | | | |
| Pesticides/PCBs | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-8 | | | | | | | | | | | | | | | | | | |
| Metals (mg/L) | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | 0.0657 | | | |
| Arsenic TR | 7440-38-2 | | | | | | | | | | | | | | | | | | 0.0131 |
| Beryllium | 7440-41-7 | | | | | | | | | | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | | | | | | | | | | |
| Chromium | 7440-47-3 | | 0.0441 | 2 | 0.0249 | 0.0221 | 0.131 | 0.0967 | | 0.0361 | 0.0899 | | 0.418 | | 0.125 | 3 | 0.0703 | 0.0188 | 0.0526 |
| Copper | 7440-50-8 | | 0.1080 | 0.1190 | | 0.0536 | | 0.1020 | | | | | 0.5650 | 0.0276 | 0.0263 | 1.9800 | 0.0345 | | 0.0612 |
| Cyanide, Total | 57-12-5 | | | | | | | | | | 0.0130 | | | | | | | | |
| Lead | 7439-92-1 | 0.0123 | 0.186 | 0.0132 | 0.003 | | 0.0044 | 0.0372 | | 0.0099 | 0.0043 | 0.0035 | 0.0723 | 0.13 | 0.0285 | 0.282 | 0.0044 | | 0.0641 |
| Mercury | 7439-97-6 | | | | | | | | | | | | | | | | | | |
| Nickel | 7440-02-0 | | | 0.7290 | 0.0445 | | 0.0730 | 0.0761 | | 0.0412 | 0.0890 | | 0.2180 | | 0.0480 | 1.6500 | 0.0629 | | 0.0596 |
| Silver TR | 7440-22-4 | | | | | | | | | | | | | | | | | | |
| Zinc | 7440-66-6 | | 0.0443 | 0.079 | | 0.0777 | 0.0614 | 0.136 | | 0.026 | 0.0237 | | 0.313 | 0.0203 | 0.0212 | 0.776 | | 0.0277 | 0.11 |

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Chemical | Sample ID / Sample Location / Sample Date / Sample Type / Well Type / Area / CAS No. | MW-5B (2/21/96) MW-5B 2/21/1996 Investigation Monitoring Outside | EW-1 (3/19/96) EW-1 3/19/1996 Investigation Extraction Inside | EW-2 (3/19/96) EW-2 3/19/1996 Investigation Extraction Inside | EW-3 (3/19/96) EW-3 3/19/1996 Investigation Extraction Inside | EW-4 (3/19/96) EW-4 3/19/1996 Investigation Extraction Outside | EW-1 (6/6/96) EW-1 6/6/1996 Investigation Extraction Inside | EW-2 (6/6/96) EW-2 6/6/1996 Investigation Extraction Inside | EW-3 (6/6/96) EW-3 6/6/1996 Investigation Extraction Inside | EW-4 (6/6/96) EW-4 6/6/1996 Investigation Extraction Outside | MW-5B (6/6/96) MW-5B 6/6/1996 Investigation Monitoring Outside | MW-3A (6/6/96) MW-3A 6/6/1996 Investigation Monitoring Outside | MW-4B (6/6/96) MW-4B 6/6/1996 Investigation Monitoring Outside | MW-6A (6/6/96) MW-6A 6/6/1996 Investigation Monitoring Outside | MW-5B (6/5/96) MW-5B 6/5/1996 Investigation Monitoring Outside | MW-5B (8/25/96) MW-5B 8/25/1996 Investigation Monitoring Outside | MW-3A (8/25/96) MW-3A 8/25/1996 Investigation Monitoring Outside | MW-4B (8/25/96) MW-4B 8/25/1996 Investigation Monitoring Outside | MW-6A (8/25/96) MW-6A 8/25/1996 Investigation Monitoring Outside |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.00065 J | | | | | | 0.012 J | | | 0.00071 J | | | 0.00074 J | 0.003 | 0.0014 | | | 0.0031 |
| 1,1-Dichloroethane | 75-34-3 | | | | | | | | | | 0.0022 | | | | | 0.0013 | | | 0.0086 |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | 0.065 | | | 0.004 J | 0.053 J | | 0.032 J | 0.005 | | | | | | | | | 0.0034 |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | | | | | | | | | | | | | 0.0054 | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | | | | | | | | | | |
| Acetone | 67-64-1 | | | | 1.3 J | 0.017 J | | | 1.200 J | 0.0099 J | 0.097 | 0.012 J | | 0.0066 J | 0.0062 J | 0.025 | 0.024 | 0.0056 | |
| Benzene | 71-43-2 | | | | | | | | | | 0.00012 J | | | | | | | | |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | | | | | | | | | | | 0.00022 J | | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | | | | | | | | |
| Chloroethane | 75-00-3 | | | | | 0.047 | | | | 0.059 | | | | 0.0053 | | | | | 0.016 |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | | | | | | | | |
| Ethylbenzene | 100-41-4 | | 2 | 2 | 19 | | 2 | 1 | 10 | | 0.00022 J | | | | | | | | |
| Methylene chloride | 75-09-2 | | 0.015 J | | | | 0.023 J | 0.029 J | 0.025 J | 0.0012 J | | | | 0.00023 J | | | | | 0.0079 |
| Styrene | 100-42-5 | | | | | | | | | | 0.00034 J | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | 0.00049 J | | | | | | | | |
| Toluene | 108-88-3 | | | | | | 0.024 J | | 0.051 J | | 0.00048 J | | | | | | | | |
| Xylene (total) | 1330-20-7 | | | | | | | | | | 0.0012 J | | | | | 0.0012 | | | |
| **SVOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | 0.12 J | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | 0.0029 J | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | 0.0026 J | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | 0.026 J | | 1.900 | | 0.014 J | | 1 | | | | | | | | | | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 0.0015 B,J | | 0.011 B,J | | | | | | 0.0011 J | | | | 0.0019 J | 0.0011 J | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | | | | | | | | |
| Phenol | 108-95-2 | | 0.081 | 0.056 | 0.77 | 0.074 | 0.064 | 0.026 J | 0.35 J | 0.034 | | | | 0.0057 | | | | | 0.007 |
| Pyrene | 129-00-0 | | | | | | | | | | | | | | | | | | |
| **Pesticides/PCBs** | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-8 | | | | | | | | | | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | 0.0161 | | | | 0.0106 | | | | 0.0101 | | | 0.0117 | | | | | | |
| Beryllium | 7440-41-7 | | | | | | | | | | | | | | | | | | |
| Cadmium | 7440-43-9 | | | | | | | | | | | | | | | | | | |
| Chromium | 7440-47-3 | 0.72 | | 0.0261 | 0.0612 | | | | 0.0831 | | 0.181 | 0.777 | 0.607 | 0.0848 | 0.0639 | 0.07 | 0.109 | 0.124 | |
| Copper | 7440-50-8 | 0.5850 | | | | 0.0289 | | | | 0.0954 | 0.0944 | 0.1630 | 0.1100 | 0.1070 | 0.2780 | 0.0680 | 0.0690 | 0.0420 | |
| Cyanide, Total | 57-12-5 | | | | 0.0170 | | | | 0.0150 | | | | | | | | | | |
| Lead | 7439-92-1 | 0.186 | | 0.015 | | 0.0046 | | 0.0044 | 0.0034 | 0.0061 | 0.0899 | 0.0665 | | 0.0964 | 0.0904 | 0.22 | | | |
| Mercury | 7439-97-6 | | | | | | | | | | | 0.00022 | 0.00022 | | | | | | |
| Nickel | 7440-02-0 | 0.4280 | | | | | | | 0.0532 | | 0.0660 | 0.4230 | 0.2940 | 0.0631 | | | 0.3790 | 0.0530 | |
| Silver TR | 7440-22-4 | | | | | | | | | | | | | | | | | | |
| Zinc | 7440-66-6 | 0.211 | 0.0256 | 0.165 | | | 0.0454 | 0.133 | 0.0249 | | 0.948 | 0.127 | | 0.263 | 0.0809 | 0.056 | 0.099 | 0.038 | 0.063 |

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Chemical | CAS No. | MW-6B (6/25/98) | MW-7B (6/25/98) | EW-1 (6/23/98) | EW-2 (6/23/98) | EW-3 (6/23/98) | EW-4 (6/23/98) | MW-5B (3/26/97) | MW-8A (3/26/97) | MW-4B (3/26/97) | MW-4A (3/26/97) | MW-6B (3/26/97) | MW-7B (3/26/97) | EW-1 (3/26/97) | EW-2 (3/26/97) | EW-3 (3/26/97) | EW-4 (3/26/97) | MW-6B (10/8/97) | MW-8A (10/8/97) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-6B | MW-7B | EW-1 | EW-2 | EW-3 | EW-4 | MW-5B | MW-8A | MW-4B | MW-4A | MW-6B | MW-7B | EW-1 | EW-2 | EW-3 | EW-4 | MW-6B | MW-8A |
| Sample Date | | 6/25/1998 | 6/25/1998 | 6/23/1998 | 6/23/1998 | 6/23/1998 | 6/23/1998 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 3/26/1997 | 10/8/1997 | 10/8/1997 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring |
| Area | | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside |
| **VOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | 0.0001 J | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.0024 | | | | | 0.004 J | 0.0088 | | | | | | | | | | | 0.0009 J |
| 1,1-Dichloroethane | 75-34-3 | | | 0.005 | | | | 0.0023 | | | 0.0009 J | | | 0.004 J | | | | 0.0004 J | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | 0.047 | 0.011 | | 0.005 J | | | | 0.001 J | | | 0.038 | 0.011 | 0.04 J | 0.003 J | | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | 0.016 | 0.035 | 0.085 J | | | | | | | | | | | | | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | 0.007 J | | | | | | | | | | | | 0.072 J | | 0.002 J | |
| Acetone | 67-64-1 | | | 0.041 | 0.15 | 0.55 | 0.012 J | 0.062 | 0.029 | 0.021 | | | | 0.037 | 0.1 | 0.64 | | 0.012 | 0.011 |
| Benzene | 71-43-2 | | | 0.006 | 0.004 J | | | | | 0.0004 J | | | | 0.007 | 0.004 J | | | 0.0003 J | 0.0001 J |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | 0.021 | | | | | | 0.0001 J | 0.018 | | | | | | | 0.0001 J | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | | | | | | | 0.002 J | | | | |
| Chloroethane | 75-00-3 | | | 0.08 | 0.025 | 0.082 J | 0.037 | | | | 0.004 | | | 0.085 | 0.043 | | 0.027 | 0.0004 J | |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | | | | | | | 0.003 J | | | | |
| Ethylbenzene | 100-41-4 | | | 0.58 | 2.90 | 12 | | | | 0.0003 J | | | | 0.51 | 2.00 | 10 | | 0.0002 J | |
| Methylene chloride | 75-09-2 | | | 0.014 | 0.005 J | | 0.01 | | | 0.0005 J | 0.0019 J | | | 0.027 | 0.014 | | 0.008 | 0.0006 J | |
| Styrene | 100-42-5 | | | | | | | | | | | | | | | | | 0.0005 J | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | 0.0004 J | | | | | | | | | |
| Toluene | 108-88-3 | | | 0.011 | 0.048 | 0.088 J | | 0.0002 J | | 0.0008 J | | | | 0.01 | 0.074 | 0.042 J | | 0.0005 J | |
| Xylene (total) | 1330-20-7 | | | 0.002 J | 0.002 J | | | | | 0.0008 J | | | | 0.002 J | 0.002 J | | | 0.0006 J | 0.0002 J |
| **SVOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | 0.003 J | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | 0.01 | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | 0.002 J | 0.07 | 0.81 | | | | | | | | | 0.12 | 1 | | | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | 0.001 J | 0.003 J | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | | | | | | | 0.001 J | | | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | 0.019 | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | 0.001 J | 0.001 J | | | 0.001 J | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | 0.002 J | | | 0.002 J | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | | | | | | | | | | |
| Phenol | 108-95-2 | | | 0.06 | 0.048 | 0.32 | 0.03 | | | | | | | 0.012 | 0.024 | 0.14 | 0.016 | | |
| Pyrene | 129-00-0 | | | | | | | | | | | | | | | | | | |
| **Pesticides/PCBs** | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | | | | | 0.0027 | 0.0029 | 0.0058 | 0.0051 | 0.0042 | 0.0034 | 0.00179 J | 0.0026 | 0.0072 | 0.0105 | | |
| Beryllium | 7440-41-7 | | | | | | | | 0.00034 J | 0.00038 J | 0.00038 J | | | | 0.00126 J | | | | |
| Cadmium | 7440-43-9 | | | | | | | 0.00204 J | 0.0065 | 0.008 | 0.0014 J | 0.0052 | | | 0.00116 J | 0.00222 J | 0.00099 J | | |
| Chromium | 7440-47-3 | 0.215 | 0.108 | | 0.0074 J | 0.0202 J | 0.0118 J | 0.107 | 0.258 | 0.165 | 0.0989 | 0.351 | 0.0453 | 0.0013 J | | 0.131 | 0.0283 | 0.0873 | 0.112 |
| Copper | 7440-50-8 | 0.1640 | 0.0300 | | 0.0310 | 0.0119 J | | 0.0440 | 0.0598 | 0.0537 | 0.0523 | 0.5770 | 0.0108 | 0.0042 J | 0.0036 J | 0.0683 | 0.0179 | 0.0317 | 0.0237 |
| Cyanide, Total | 57-12-5 | | | 0.0050 J | | 0.0130 | | | | | | | | | | | | | |
| Lead | 7439-92-1 | | | | | | | 0.35 | 0.034 | 0.0083 J | 0.034 | 0.107 | 0.0115 J | | | 0.0124 J | 0.008 J | 0.064 | 0.0143 J |
| Mercury | 7439-97-6 | | | | | | | 0.000113 J | 0.000162 J | 0.000171 J | 0.000088 J | 0.000102 J | 0.000082 J | 0.00064 | 0.00033 | 0.00027 | 0.000192 J | 0.000086 J | 0.000088 J |
| Nickel | 7440-02-0 | 0.0940 | 0.1340 | 0.0224 J | 0.0400 J | 0.0230 J | 0.0222 J | 0.0540 | 0.2740 | 0.1070 | 0.0830 | 0.2310 | 0.0390 | 0.0250 | 0.0112 J | 0.1320 | 0.0610 | 0.0490 | 0.1670 |
| Silver TR | 7440-22-4 | | | | | | | 0.00018 J | | | | | 0.00115 J | | | | | | |
| Zinc | 7440-66-6 | 0.045 | 0.048 | 0.03 | 0.055 | 0.015 J | 0.026 | 0.0248 | 0.0473 | 0.0367 | 0.0528 | 0.123 | 0.0087 | 0.0183 | 0.0054 | 0.0181 | 0.0171 | 0.014 | 0.0212 |

Table 1

**10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells**
**E.H. Schilling Landfill-Ironton, Ohio**

| Chemical (Sample ID / Sample Location / Sample Date / Sample Type / Well Type / Area) | CAS No. | MW-4B (10/8/97) MW-4B 10/8/1997 Investigation Monitoring Outside | MW-6A (10/8/97) MW-6A 10/8/1997 Investigation Monitoring Outside | MW-8B (10/8/97) MW-8B 10/8/1997 Investigation Monitoring Outside | MW-7B (10/8/97) MW-7B 10/8/1997 Investigation Monitoring Outside | EW-1 (10/7/97) EW-1 10/7/1997 Investigation Extraction Inside | EW-2 (10/7/97) EW-2 10/7/1997 Investigation Extraction Inside | EW-3 (10/7/97) EW-3 10/7/1997 Investigation Extraction Inside | EW-4 (10/7/97) EW-4 10/7/1997 Investigation Extraction Outside | MW-8B (3/31/00) MW-8B 3/31/2000 Investigation Monitoring Outside |
|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (mg/L)** | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | |
| Trichloroethane | 79-01-6 | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.0037 | 0.0036 | 0.0008 J | | | | | | 0.0008 J |
| 1,1-Dichloroethane | 75-34-3 | | 0.0032 | | | 0.004 J | | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | 0.0006 J | | | 0.036 | 0.006 | 0.021 | 0.007 | 0.0013 |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | |
| 2-Butanone | 78-93-3 | 0.0091 | | | | | | | | 0.0021 J |
| 2-Hexanone | 591-78-6 | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | 0.005 J | 0.054 | | |
| Acetone | 67-64-1 | 0.12 | 0.0065 | | | 0.039 | 0.064 | 0.24 | 0.013 J | 0.017 |
| Benzene | 71-43-2 | 0.0003 J | | | | 0.003 J | 0.003 J | 0.007 | | 0.0002 J |
| Bromomethane | 74-83-9 | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | 0.0002 J | | | 0.24 | 0.1 | 0.14 | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | 0.002 | 0.001 | | |
| Chloroethane | 75-00-3 | 0.0006 J | 0.016 | | | 0.063 | 0.036 | 0.054 J | 0.073 | |
| Chloroform | 67-66-3 | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | 0.003 J | | | |
| Ethylbenzene | 100-41-4 | 0.0002 J | | | | 0.16 | 1.80 | 6 | | 0.0003 J |
| Methylene chloride | 75-09-2 | 0.0016 J | 0.0008 J | | | 0.006 | | 0.005 J | | |
| Styrene | 100-42-5 | 0.0001 J | | | | | | | | 0.0005 J |
| Tetrachloroethene | 127-18-4 | | | | | 0.006 | 0.005 J | 0.005 J | | |
| Toluene | 108-88-3 | 0.0005 J | 0.0002 J | | | 0.003 J | 0.053 | 0.028 | | 0.0004 J |
| Xylene (total) | 1330-20-7 | | | | | | 0.002 J | 0.005 | | 0.0003 J |
| **SVOCs (mg/L)** | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | 0.002 J | 0.001 J | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | 0.004 J | 0.045 | 0.58 | | |
| Anthracene | 120-12-7 | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | 0.001 J | | | 0.0007 J |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | 0.001 J | | | |
| Chrysene | 218-01-9 | | | | | | | | | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | 0.002 J |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | |
| Phenol | 108-95-2 | | 0.006 | | | 0.056 | 0.036 | 0.28 | 0.035 | |
| Pyrene | 129-00-0 | | | | | | | | | |
| **Pesticides/PCBs** | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | 0.0059 | | | 0.0023 J | 0.0042 | 0.0124 | 0.01 | 0.0018 J |
| Beryllium | 7440-41-7 | | | | | | 0.00218 J | | | |
| Cadmium | 7440-43-9 | | | | | | | | | 0.0027 |
| Chromium | 7440-47-3 | 0.0512 | 0.0483 | 0.344 | 0.0111 | | | 0.0142 | 0.0136 | 0.0461 |
| Copper | 7440-50-8 | 0.0123 | 0.0486 | 1.1000 | 0.0061 J | 0.0051 J | 0.0058 J | 0.0690 | 0.0047 J | 0.0355 |
| Cyanide, Total | 57-12-5 | | | | | | | | | |
| Lead | 7439-92-1 | | 0.067 | 0.269 | | | | 0.0063 J | | 0.036 |
| Mercury | 7439-97-6 | 0.00008 J | 0.000032 J | 0.000048 J | 0.000066 J | | 0.000025 J | 0.000027 J | | 0.000063 J |
| Nickel | 7440-02-0 | 0.0260 | 0.0700 | 0.2390 | 0.0102 J | 0.0300 | 0.0088 J | 0.0670 | 0.0230 | 0.0340 |
| Silver TR | 7440-22-4 | | 0.00025 J | 0.00028 J | 0.00039 J | 0.00023 J | 0.00023 J | 0.00024 J | 0.0002 J | 0.00062 |
| Zinc | 7440-66-6 | 0.0073 | 0.198 | 0.569 | 0.0056 | 0.0288 | 0.0068 | 0.0185 | 0.0269 | 0.0185 |

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Chemical | CAS No. | MW-3A (3/31/88)<br>MW-3A<br>3/31/1988<br>Investigation<br>Monitoring<br>Outside | MW-4B (3/31/88)<br>MW-4B<br>3/31/1988<br>Investigation<br>Monitoring<br>Outside | MW-6A (3/31/88)<br>MW-6A<br>3/31/1988<br>Investigation<br>Monitoring<br>Outside | MW-7B (3/31/88)<br>MW-7B<br>3/31/1988<br>Investigation<br>Monitoring<br>Outside | EW-1 [illegible]<br>EW-1<br>[illegible]<br>Investigation<br>Extraction<br>Inside | EW-2 [illegible]<br>EW-2<br>[illegible]<br>Investigation<br>Extraction<br>Inside | EW-3 [illegible]<br>EW-3<br>[illegible]<br>Investigation<br>Extraction<br>Inside | EW-4 [illegible]<br>EW-4<br>[illegible]<br>Investigation<br>Extraction<br>Outside | MW-3B [illegible]<br>MW-3B<br>[illegible]<br>Investigation<br>Monitoring<br>Outside | MW-3A [illegible]<br>MW-3A<br>[illegible]<br>Investigation<br>Monitoring<br>Outside | MW-4B [illegible]<br>MW-4B<br>[illegible]<br>Investigation<br>Monitoring<br>Outside | MW-6A [illegible]<br>MW-6A<br>[illegible]<br>Investigation<br>Monitoring<br>Outside | MW-6B [illegible]<br>MW-6B<br>[illegible]<br>Investigation<br>Monitoring<br>Outside | MW-7B [illegible]<br>MW-7B<br>[illegible]<br>Investigation<br>Monitoring<br>Outside | EW-1 [illegible]<br>EW-1<br>[illegible]<br>Investigation<br>Extraction<br>Inside | EW-2 [illegible]<br>EW-2<br>[illegible]<br>Investigation<br>Extraction<br>Inside | EW-3 [illegible]<br>EW-3<br>[illegible]<br>Investigation<br>Extraction<br>Inside | EW-4 [illegible]<br>EW-4<br>[illegible]<br>Investigation<br>Extraction<br>Outside |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | | | | | | | | | | 0.0021 | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | | | | 0.003 J | | | | 0.0005 J | | | | 0.0004 J | | 0.004 J | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | 0.0017 | | 0.034 | 0.006 | | 0.004 J | | | | 0.0024 | | | 0.04 | 0.006 | 0.018 J | 0.007 |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | 0.0041 J | | | | | | 0.041 J | | | | | | | | 0.009 J | 0.023 | 0.032 J | 0.006 J |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | 0.007 J | | | | | 0.0012 J | | | | 0.006 J | 0.008 J | 0.027 J | |
| Acetone | 67-64-1 | 0.015 | 0.0088 | 0.0054 | | 0.035 | 0.077 | 0.24 | 0.011 J | 0.019 | 0.0072 | 0.023 | 0.0074 | 0.015 | | 0.05 | 0.08 | 0.089 J | 0.01 J |
| Benzene | 71-43-2 | | | | | 0.003 J | 0.003 J | | | 0.0004 J | | 0.0002 J | | 0.0004 J | | 0.003 J | 0.003 J | 0.009 J | |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | 0.088 | | | | | | | | | | | | 0.014 | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | 0.001 J | | | | | | | | | | 0.001 J | | |
| Chloroethane | 75-00-3 | | | 0.0078 | | 0.053 | 0.025 | 0.064 | 0.042 | | | 0.0003 J | 0.011 | | | 0.058 | 0.025 | 0.088 | 0.086 |
| Chloroform | 67-66-3 | 0.0001 J | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | 0.007 | | | 0.003 J | | | | 0.0004 J | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | 0.003 J | | | | | | | | | | 0.003 J | | |
| Ethylbenzene | 100-41-4 | | | | | 0.19 | 1.4 | 10 | | 0.0002 J | | 0.0001 J | | | | 0.22 | 2.9 | 11 | |
| Methylene chloride | 75-09-2 | | | 0.0039 | | 0.054 | 0.024 | 0.036 J | 0.027 | | | 0.0009 J | 0.0032 | | | 0.006 | | | |
| Styrene | 100-42-5 | | | | | | | | | | | 0.0002 J | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | | | | | | | | | |
| Toluene | 108-88-3 | | | | | | 0.029 | 0.023 J | | 0.0004 J | | 0.0004 J | 0.0002 J | 0.0002 J | | 0.003 J | 0.023 | 0.02 J | |
| Xylene (total) | 1330-20-7 | | | | | | 0.002 J | | | 0.0001 J | | | | | | 0.001 J | 0.002 J | 0.008 J | |
| **SVOCs (mg/L)** | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | 0.004 J | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | 0.002 J | | 0.008 J | | | | | | | | | | 0.004 J | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | 0.009 J | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | 0.003 J | | | 0.017 | 0.023 | 0.47 | | | | | | | | | | 0.22 | |
| Anthracene | 120-12-7 | | | | | | | 0.001 J | | | | | | 0.01 J | | | | 0.01 | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | 0.039 | | | | | | | | | | 0.018 | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | 0.04 | | | | | | | | | | 0.016 | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | 0.002 J | | | | | | | | | | 0.012 | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | 0.015 | | | | | | | | | | 0.008 J | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | 0.009 J | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | 0.001 J | | 0.002 J | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | 0.0008 J | 0.0005 J | 0.001 J | 0.002 J | 0.001 J | 0.002 J | | | | | | | 0.021 | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | 0.051 | | | | | | | | | | 0.028 | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | 0.008 J | | | | | | | | | | 0.008 J | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | 0.011 | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | 0.037 | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | 0.008 J | 0.008 J | 0.008 J | 0.008 J | 0.008 J | 0.006 J | | | | 0.008 J |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | 0.006 J | 0.006 J | | | | |
| Fluoranthene | 206-44-0 | | | | | | | 0.004 J | | | | | | 0.009 J | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | 0.006 J | | | | | | | | | | 0.003 J | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | 0.0008 J | 0.003 J | | | | | | | | | | 0.009 J | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | 0.009 J | | | | | | 0.008 J | | | | 0.011 | |
| Phenol | 108-95-2 | | 0.01 | 0.001 J | | 0.055 | 0.036 | 0.41 | 0.034 | | | 0.003 J | 0.003 J | | | 0.059 | 0.035 | 0.28 | 0.033 |
| Pyrene | 129-00-0 | | | | | | | 0.025 | | | | | | | | | | 0.012 | |
| **Pesticides/PCBs** | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | | | | | | | | | | |
| **Metals (mg/L)** | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | 0.0027 | 0.0032 | 0.0459 | 0.0016 J | 0.0036 | 0.0027 | 0.009 | 0.0124 | | | | 0.23 | | | | | 0.009 J | 0.01 |
| Beryllium | 7440-41-7 | 0.00053 J | 0.00067 J | 0.0052 | | | 0.00188 J | | | | | | 0.051 | | | | 0.002 | | |
| Cadmium | 7440-43-9 | | 0.0036 | 0.0045 | | 0.00201 J | 0.0038 | 0.0035 | 0.00231 J | | | | 0.032 | | | | | | |
| Chromium | 7440-47-3 | 0.436 | 0.0922 | 1.49 | 0.0198 | | | 0.0106 | 0.0117 | 0.067 | 0.423 | 0.107 | 6.96 | 0.176 | 0.04 | | | 0.0194 J | 0.0106 J |
| Copper | 7440-50-8 | 0.0675 | 0.0202 | 0.1170 | 0.0026 J | 0.0035 J | 0.0054 J | 0.0119 | 0.0040 J | 0.0780 | 0.0490 | 0.0177 J | 0.4400 | 0.6190 | | 0.0087 J | 0.0147 J | 0.3730 | 0.0122 J |
| Cyanide, Total | 57-12-5 | | | | | | | | | | | | | | | | | | |
| Lead | 7439-92-1 | 0.0225 J | | 0.068 | | | | | | 0.063 J | | | 0.25 J | 0.15 | | | | 0.028 J | |
| Mercury | 7439-97-6 | | | 0.00029 J | | 0.000138 J | | 0.000087 J | 0.00004 J | | 0.000062 J | 0.000051 J | 0.00057 | | | | | | |
| Nickel | 7440-02-0 | 0.2500 | 0.0410 | 1.3300 | 0.0130 | 0.0130 | 0.0097 J | 0.0340 | 0.0240 | 0.0710 | 0.2870 | 0.0550 | 5.0100 | 0.0980 | 0.0152 J | 0.0332 J | 0.0308 J | 0.0390 J | 0.0243 J |
| Silver TR | 7440-22-4 | 0.0007 | 0.0004 J | 0.0004 J | 0.0003 J | | | | | | | | | | | | | | |
| Zinc | 7440-66-6 | 0.0312 | 0.0136 | 1.46 | 0.011 | 0.0382 | 0.0057 | 0.006 | 0.0035 J | 0.039 | 0.057 | 0.0156 J | 1.89 | 0.123 | 0.025 | 0.028 | 0.0085 J | 0.029 | 0.0087 J |

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Sample ID | | MW-2S (3/31/99) | MW-3A (3/31/99) | MW-4B (3/31/99) | MW-6A (3/31/99) | MW-6B (3/31/99) | MW-7B (3/31/99) | EW-1 (3/30/99) | EW-2 (3/30/99) | EW-3 (3/30/99) | EW-4 (3/30/99) | MW-2S (8/18/99) | MW-3A (8/18/99) | MW-4B (8/18/99) | MW-6A (8/18/99) | MW-7B (8/18/99) | EW-1 (8/17/99) | EW-2 (8/17/99) | EW-3 (8/17/99) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-2S | MW-3A | MW-4B | MW-6A | MW-6B | MW-7B | EW-1 | EW-2 | EW-3 | EW-4 | MW-2S | MW-3A | MW-4B | MW-6A | MW-7B | EW-1 | EW-2 | EW-3 |
| Sample Date | | 3/31/1999 | 3/31/1999 | 3/31/1999 | 3/31/1999 | 3/31/1999 | 3/31/1999 | 3/30/1999 | 3/30/1999 | 3/30/1999 | 3/30/1999 | 8/18/1999 | 8/18/1999 | 8/18/1999 | 8/18/1999 | 8/18/1999 | 8/17/1999 | 8/17/1999 | 8/17/1999 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction |
| Area | | Outside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside |
| Chemical | CAS No. | | | | | | | | | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.0001 J | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | 75-34-3 | 0.0004 J | | | | | | 0.002 J | | | | 0.0006 J | | | 0.001 J | | 0.002 J | | |
| 1,1-Dichloroethene | 75-35-4 | 0.0024 | 0.0013 | 0.0016 | 0.0029 | | 0.0006 J | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | | 0.0016 | | | 0.036 | 0.007 | 0.016 J | 0.005 J | | | | 0.0004 J | | 0.039 | 0.007 | 0.018 |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | 0.0004 J | | | | | 0.008 J | 0.021 | 0.028 J | | 0.0086 | | 0.0048 J | | | | 0.016 | 0.084 |
| 2-Hexanone | 591-78-6 | | | 0.001 J | | | | | | | | 0.0011 J | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | 0.0023 J | 0.0007 J | 0.0026 J | | | | | | | | 0.0026 J | | | | | | | 0.025 |
| Acetone | 67-64-1 | 0.012 | | | | | | 0.026 | 0.066 | 0.12 | 0.014 J | 0.074 | 0.0049 J | 0.026 | | | 0.01 J | 0.037 | 0.1 |
| Benzene | 71-43-2 | 0.0004 J | 0.0001 J | 0.0002 J | | | | 0.002 J | 0.003 J | 0.006 J | | 0.0005 J | | | 0.0003 J | | | 0.008 J | 0.009 |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | 0.0004 J | | 0.0004 J | 0.023 | | | 0.057 | 0.013 | | | | | | 0.0016 | | 0.05 | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | 0.001 J | | | | | | | | | 0.001 J | 0.001 J |
| Chloroethane | 75-00-3 | | | 0.0003 J | 0.0067 | | | 0.034 | 0.016 | 0.033 | 0.033 | | | | 0.014 | | 0.046 | 0.016 | 0.043 |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | 0.003 J | | | | | | | | | 0.004 J | |
| Ethylbenzene | 100-41-4 | 0.0003 J | 0.0002 J | | | | | 0.12 | 0.87 | 7.1 | 0.015 | 0.0004 J | | | 0.0001 J | | 0.033 | 1.3 | 7.4 |
| Methylene chloride | 75-09-2 | 0.0004 J | | 0.0004 J | 0.0027 | | | 0.027 | 0.019 | 0.021 J | 0.017 | | | | | | 0.041 | 0.022 | 0.051 |
| Styrene | 100-42-5 | | 0.0002 J | | | | | | | | | 0.0002 J | | | | | | | |
| Tetrachloroethene | 127-18-4 | 0.0002 J | | | | | | | | | | | | | | | | | |
| Toluene | 108-88-3 | 0.0006 J | 0.0001 J | 0.0003 J | | | 0.0004 J | | 0.012 | | | 0.0006 J | | 0.0002 J | 0.0001 J | | | 0.008 | 0.012 |
| Xylene (total) | 1330-20-7 | 0.0005 J | | | | | | | 0.003 J | 0.009 J | | 0.0007 J | | | | | | 0.002 J | 0.007 |
| SVOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4 Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2 Methylphenol | 95-48-7 | | | | | | | | | 0.006 J | | | | | | | | | 0.006 J |
| 2 Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | | | | 0.008 J | 0.26 | | | | | | | | | 0.34 |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | 0.011 | | | | | | | | | 0.006 J |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | | | | | | | | | | 0.008 J |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | 0.004 J | | | | | | | | | 0.003 J |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | 0.006 J | | | | | | | | | 0.004 J |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | | | 0.001 J |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | 0.001 J | | | | | | | | | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | 0.002 J | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | 0.015 | | | | | | | | | 0.012 |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | 0.002 J | | | | | | | | | 0.002 J |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | | | | | | | | | | 0.001 J |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | 0.002 J | | | | | | | | | 0.001 J |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | 0.003 J | | | | | | | | | 0.003 J |
| Phenol | 108-95-2 | | | | | | | 0.045 | 0.04 | 0.27 | 0.032 | | | 0.003 J | 0.007 | | 0.032 | 0.037 | 0.38 |
| Pyrene | 129-00-0 | | | | | | | | | 0.009 J | | | | | | | | | 0.009 J |
| Pesticides/PCBs | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | | | | | | | | | | |
| Metals (mg/L) | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | 0.014 | 0.019 | | | | | | | | | 0.0084 J | 0.013 | | | | 0.0087 J |
| Beryllium | 7440-41-7 | | | 0.002 | 0.0027 | | | | 0.0027 | | | | | 0.00168 J | 0.00167 J | | | 0.0022 | |
| Cadmium | 7440-43-9 | | | | | | | | | | | 0.0154 | 0.0161 | 0.0203 | 0.0067 | | | | |
| Chromium | 7440-47-3 | 0.077 | 0.178 | 0.236 | 0.478 | 0.434 | 0.036 | | | 0.0076 J | | 0.171 | 0.877 | 0.284 | 0.495 | 0.076 | | | 0.0056 J |
| Copper | 7440-50-8 | | 0.0380 | 0.0260 | 0.6720 | 0.5350 | 0.0189 J | 0.0850 | 0.0073 J | 0.0197 J | 0.0236 J | 0.0360 | 0.0880 | 0.0260 | 0.0980 | 0.0092 J | 0.0510 | 0.0360 | 0.0310 |
| Cyanide Total | 57-12-5 | | | | | | | | | | | | | | | | | | |
| Lead | 7439-92-1 | | | | 0.45 | 0.11 | | 0.03 J | | | | | 0.084 J | | 0.4 | | | | |
| Mercury | 7439-97-6 | 0.000046 J | 0.000048 J | | | | | | | | | | 0.000046 J | | | | | | |
| Nickel | 7440-02-0 | 0.0257 J | 0.1680 | 0.0760 | 0.3670 | 0.1690 | 0.0321 J | 0.0760 | 0.0157 J | 0.0276 J | 0.0365 J | 0.1690 | 0.5130 | 0.1340 | 0.4340 | 0.0255 J | 0.0530 | 0.0790 | 0.0172 J |
| Silver TR | 7440-22-4 | | | | | | | | | | | | | | | | | | 0.0091 |
| Zinc | 7440-66-6 | 0.0157 J | 0.084 | 0.022 | 0.922 | 0.103 | 0.055 | 0.849 | 0.0192 J | 0.034 | 0.0176 J | 0.029 | 0.075 | 0.0172 J | 0.492 | 0.0089 J | 0.097 | 0.011 J | 0.02 |

Table 1

**10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells**
**E.H. Schilling Landfill-Ironton, Ohio**

| Sample ID | | EW-4 (8/17/99) | MW-2B (4/6/00) | MW-3A (4/6/00) | MW-4B (4/6/00) | MW-4A (4/6/00) | MW-7B (4/6/00) | EW-1 (4/6/00) | EW-6 (4/6/00) | EW-3 (4/6/00) | EW-4 (4/6/00) | MW-3A (9/18/00) | MW-4B (9/18/00) | MW-8A (9/18/00) | MW-7B (9/18/00) | EW-1 (9/18/00) | EW-6 (9/18/00) | EW-3 (9/18/00) | EW-4 (9/18/00) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | EW-4 | MW-2B | MW-3A | MW-4B | MW-4A | MW-7B | EW-1 | EW-6 | EW-3 | EW-4 | MW-3A | MW-4B | MW-8A | MW-7B | EW-1 | EW-6 | EW-3 | EW-4 |
| Sample Date | | 8/17/1999 | 4/6/2000 | 4/6/2000 | 4/6/2000 | 4/6/2000 | 4/6/2000 | 4/6/2000 | 4/6/2000 | 4/6/2000 | 4/6/2000 | 9/18/2000 | 9/18/2000 | 9/18/2000 | 9/18/2000 | 9/18/2000 | 9/18/2000 | 9/18/2000 | 9/18/2000 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction |
| Area | | Outside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside |
| Chemical | CAS No. | | | | | | | | | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | 0.0006 J | | | 0.0003 J | | 0.002 J | | | | | 0.0002 J | | | 0.002 J | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | 0.007 | | | | | | 0.047 | 0.006 | 0.008 | 0.005 | | | 0.004 | | 0.034 | 0.007 | 0.013 J | 0.006 |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | 0.006 J | | | 0.0083 J | | | 0.005 | 0.015 | | | | 0.0032 J | | | | 0.013 | 0.035 J | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | 0.007 J | | | | | | | | 0.057 J | |
| Acetone | 67-64-1 | 0.01 J | 0.0072 | 0.0026 J | 0.043 | 0.0034 J | | 0.012 J | 0.023 | 0.01 J | 0.017 J | 0.0049 J | 0.017 | 0.0046 J | | 0.009 J | 0.026 | 0.16 | 0.011 J |
| Benzene | 71-43-2 | | 0.0003 J | | | | | 0.001 J | 0.003 J | 0.008 | | 0.0002 J | | | | 0.002 J | 0.003 J | 0.006 J | |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | | | | | 0.072 | 0.087 | 0.048 | 0.017 | | | 0.5 | | 0.049 | 0.011 | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | | 0.001 J | | | | | | | | 0.002 J | | |
| Chloroethane | 75-00-3 | 0.061 | | | | 0.0076 | | 0.041 | 0.016 | 0.026 | 0.039 | | | 0.017 | | 0.029 | 0.011 | 0.032 | 0.047 |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | | 0.003 J | | | | | | | | 0.003 J | | |
| Ethylbenzene | 100-41-4 | | | | | | | 0.05 | 0.37 | 5.1 | | | | | | 0.053 | 0.34 | 8.5 | |
| Methylene chloride | 75-09-2 | 0.05 | | | 0.0007 J | 0.0002 J | | 0.008 | 0.004 J | 0.004 J | 0.02 | | | 0.0086 | | 0.039 | 0.036 | 0.049 | 0.084 |
| Styrene | 100-42-5 | | | | | | | | | | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | | | | | | | | | |
| Toluene | 108-88-3 | | 0.0005 J | | | | | 0.004 J | | 0.008 | | 0.0001 J | 0.0002 J | 0.0002 J | | 0.001 J | 0.001 J | 0.008 J | |
| Xylene (total) | 1330-20-7 | | | | | | | | 0.002 J | 0.004 J | | | 0.0002 J | | | | 0.002 J | 0.008 J | |
| SVOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | | | | | 0.003 J | | | | | | | | 0.008 J | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | 0.002 J | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | | | | | 0.15 | | | | | | | | 0.18 | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | 0.004 J | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | | 0.05 | | | | | | | | 0.12 | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | | 0.066 | | | | | | | | 0.089 | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | 0.016 J | | | | | | | | 0.044 | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | 0.026 | | | | | | | | 0.088 | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | 0.004 J | | | | | | | | 0.011 | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | 0.001 J | | | | | | | | 0.001 J | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | 0.004 J | | | | | | | | | | | | | | | 0.01 J | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | | 0.077 | | | | | | | | 0.16 | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | 0.01 J | | | | | | | | 0.017 | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | 0.002 J | | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | 0.006 J | | | | | | | | 0.012 | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | 0.001 J | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | 0.01 J | | | | | | | | 0.016 | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | 0.003 J | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | 0.01 J | | | | | | | | 0.023 | |
| Phenol | 108-95-2 | 0.062 | | | 0.001 J | 0.008 | | 0.025 | 0.032 | 0.12 | 0.038 | | 0.001 J | 0.002 J | | 0.032 | 0.03 | 0.2 | 0.044 |
| Pyrene | 129-00-0 | | | | | | | | | 0.034 | | | | | | | | 0.078 | |
| Pesticides/PCBs | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | | | | | | | | | | |
| Metals (mg/L) | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | | | 0.04 | | | | 0.0061 J | 0.0094 J | | 0.0086 J | 0.0454 | | | | 0.0078 J | |
| Beryllium | 7440-41-7 | | | | | 0.0042 | | | 0.0017 J | | | | 0.002 | 0.0045 | | | 0.0022 | | |
| Cadmium | 7440-43-9 | | | | | 0.0031 | | | 0.00117 J | | 0.00123 J | 0.0032 | 0.0117 | 0.009 | | | | | |
| Chromium | 7440-47-3 | | 0.136 | 0.113 | 0.102 | 0.56 | 0.0247 J | | | | | 0.233 | 0.225 | 0.479 | 0.121 | | | | 0.014 J |
| Copper | 7440-50-8 | 0.0067 J | 0.1020 | 0.0260 | 0.0101 J | 0.0610 | | 0.0340 | | 0.0390 | | 0.0475 | 0.0250 J | 0.0756 | 0.0086 J | 0.0581 | 0.0210 J | 0.0640 | 0.0084 J |
| Cyanide, Total | 57-12-5 | | | | | | | | | | | | | | | | | | |
| Lead | 7439-92-1 | | 0.036 J | | | 0.054 J | | | | | | | | 0.0431 J | | | | | |
| Mercury | 7439-97-6 | | | | | | | | | | | | | | | 0.00011 J | 0.000063 J | | |
| Nickel | 7440-02-0 | 0.0128 J | 0.0840 | 0.0660 | 0.0426 J | 0.4380 | 0.0160 J | 0.3600 | 0.1010 | 0.0184 J | 0.0264 J | 0.1360 | 0.1190 | 0.3930 | 0.0188 J | 0.0648 | 0.1180 | 0.0865 J | 0.0310 J |
| Silver TR | 7440-22-4 | | | | | | | | | | | | 0.0022 J | | | | | | |
| Zinc | 7440-66-6 | 0.0036 J | 0.029 | 0.026 | | 0.52 | | 0.092 | 0.0164 J | 0.0119 J | 0.0086 J | 0.0581 | | 0.499 | 0.0166 J | 0.157 | 0.0233 | 0.0216 | 0.0126 J |

Table 1

# 10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Sample ID | | MW-3A (10/3/01) | MW-4B (10/3/01) | MW-6A (10/3/01) | MW-6B (10/3/01) | MW-7B (10/3/01) | EW-1 (10/1/01) | EW-2 (10/1/01) | EW-3 (10/1/01) | EW-4 (10/1/01) | MW-3A (4/11/01) | MW-4B (4/11/01) | MW-6A (4/11/01) | MW-6B (4/11/01) | MW-7B (4/11/01) | EW-1 (4/18/01) | EW-2 (4/18/01) | EW-3 (4/18/01) | EW-4 (4/18/01) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Location | | MW-3A | MW-4B | MW-6A | MW-6B | MW-7B | EW-1 | EW-2 | EW-3 | EW-4 | MW-3A | MW-4B | MW-6A | MW-6B | MW-7B | EW-1 | EW-2 | EW-3 | EW-4 |
| Sample Date | | 10/3/2001 | 10/3/2001 | 10/3/2001 | 10/3/2001 | 10/3/2001 | 10/1/2001 | 10/1/2001 | 10/1/2001 | 10/1/2001 | 4/11/2001 | 4/11/2001 | 4/11/2001 | 4/11/2001 | 4/11/2001 | 4/18/2001 | 4/18/2001 | 4/18/2001 | 4/18/2001 |
| Sample Type | | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation | Investigation |
| Well Type | | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction | Monitoring | Monitoring | Monitoring | Monitoring | Monitoring | Extraction | Extraction | Extraction | Extraction |
| Area | | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside | Outside | Outside | Outside | Outside | Outside | Inside | Inside | Inside | Outside |
| Chemical | CAS No. | | | | | | | | | | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | 0.0004 J | | | | | | | | | 0.0003 J | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | 0.0002 J | | 0.0005 J | | | | | | | | 0.0001 J | 0.0003 J | | 0.001 J | | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | 0.0032 | | | 0.017 | 0.008 | 0.009 J | 0.005 | | | 0.0017 | | | 0.032 | 0.008 | 0.007 | 0.005 J |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | | | | 0.003 J | | | | | | | | | 0.004 J | 0.008 J | |
| 2-Hexanone | 591-78-6 | | | | | | | | | | | | | | | | | 0.008 J | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | | | | | | | | | | 0.026 | |
| Acetone | 67-64-1 | | 0.0063 | | | | 0.018 J | 0.02 | | 0.006 J | 0.0028 J | 0.0051 | | 0.025 | 0.0033 J | 0.007 J | 0.014 J | 0.030 | 0.012 J |
| Benzene | 71-43-2 | | | | 0.0002 J | | 0.003 J | 0.003 J | 0.005 J | | | | | 0.0002 J | | 0.002 J | 0.002 J | 0.006 | |
| Bromomethane | 74-83-9 | | | | | | | | | | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | 0.0068 | | | | 0.024 | | | | | 0.99 | | | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | 0.001 J | | | | | | | | | | | |
| Chloroethane | 75-00-3 | | | 0.015 | 0.0003 J | | 0.034 | 0.009 | 0.025 J | 0.041 | | | 0.013 | | | 0.033 | 0.01 | 0.04 | 0.032 |
| Chloroform | 67-66-3 | | | | | | | | | | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | | | | | | | 0.006 | 0.007 | 0.008 | 0.008 |
| cis 1,2-Dichloroethene | 156-59-2 | | | | | | | 0.003 J | | | | | | | | | 0.002 J | | |
| Ethylbenzene | 100-41-4 | | | | | | 0.065 | 0.098 | 5.7 | | | | 0.0001 J | 0.0001 J | | 0.013 | 0.14 | 8 | |
| Methylene chloride | 75-09-2 | | | 0.011 | | | 0.007 | 0.005 | | 0.006 | | | 0.006 | | | 0.004 J | 0.002 J | 0.008 J | |
| Styrene | 100-42-5 | | | | | | | | | | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | | | | | | | | | | |
| Toluene | 108-88-3 | | | | 0.0001 J | | | | 0.006 J | | | 0.0002 J | | 0.0002 J | | | 0.001 J | 0.005 | |
| Xylene (total) | 1330-20-7 | 0.0001 J | 0.0003 J | | 0.0002 J | | | 0.003 J | 0.036 | | | | | 0.0003 J | | 0.001 J | 0.002 J | 0.047 | |
| SVOCs (mg/L) | | | | | | | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | 0.003 J | | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | | | | 0.006 J | | | | | | | | | 0.006 J | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | | | | | | | | | 0.002 J | |
| Nitrobenzene | 98-95-3 | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | | | | 0.18 | | | | | | | | | 0.049 | |
| Anthracene | 120-12-7 | | | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | 0.013 | | | | | | | | | 0.017 | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | 0.014 | | | | | | | | | 0.018 | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | 0.006 J | | | | | | | | | 0.009 J | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | 0.006 J | | | | | | | | | 0.01 J | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | | | | | | | | | 0.001 J | |
| Benzoic acid | 65-85-0 | | | | | | | | | | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | | | | | | | | 0.002 J | 0.002 J | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | | | 0.01 | | | | 0.001 J | | 0.001 J | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | 0.022 | | | | | | | | | 0.022 | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | 0.003 J | | | | | | | | | 0.009 J | |
| Dibenzofuran | 132-64-9 | | | | | | | | | | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | 0.001 J | | | | | | | | | 0.002 J | |
| Fluorene | 86-73-7 | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | 0.003 J | | | | | | | | | 0.003 J | |
| Isophorone | 78-59-1 | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | | 0.001 J | | | | | | | | | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | 0.003 J | | | | | | | | | 0.009 J | |
| Phenol | 108-95-2 | 0.0008 J | 0.003 J | 0.009 | | | 0.042 | 0.023 | 0.24 | 0.043 | 0.0007 J | 0.001 J | 0.002 J | | | 0.043 | 0.046 | 0.88 | 0.044 |
| Pyrene | 129-00-0 | | | | | | | | 0.011 | | | | | | | | | 0.014 | |
| Pesticides/PCBs | | | | | | | | | | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | | | | | | | | | | |
| Metals (mg/L) | | | | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | | | | | 0.006 J | | | | | |
| Arsenic TR | 7440-38-2 | | | 0.011 | | 0.0263 | | | 0.006 J | | | 0.0043 J | 0.0361 | 0.0117 | 0.0127 | | | 0.0117 | 0.0079 J |
| Beryllium | 7440-41-7 | | | 0.002 J | | 0.0011 J | | 0.0027 | | | | 0.00066 J | 0.0024 | | | | 0.0013 J | | |
| Cadmium | 7440-43-9 | | 0.0012 J | | 0.0008 J | | | | | | | | | 0.001 J | | | | 0.0011 J | 0.0014 J |
| Chromium | 7440-47-3 | 0.109 | 0.0649 | 0.193 | 0.514 | 0.0351 | 0.0139 J | 0.004 J | 0.0198 J | 0.0049 J | 0.209 | 0.0684 | 0.322 | 2.75 | 0.0114 J | | 0.003 J | 0.0808 | 0.0189 J |
| Copper | 7440-50-8 | 0.0345 | 0.0114 J | 0.0207 J | 0.1430 | 0.0115 J | 0.0154 J | 0.0187 J | 0.2080 | 0.0035 J | 0.0229 J | 0.0111 J | 0.0667 | 0.2340 | 0.0070 J | 0.0602 | 0.0094 J | 0.4080 | 0.0080 |
| Cyanide, Total | 57-12-5 | | | | | | | | | | | | | | | | | | |
| Lead | 7439-92-1 | 0.0332 J | | 0.106 | 0.0283 J | | | | 0.0311 J | | 0.0102 J | | 0.0756 J | 0.0415 J | | 0.0106 J | | 0.0684 J | 0.0084 J |
| Mercury | 7439-97-6 | | | | | | | | | | | | | | | 0.000063 J | | | |
| Nickel | 7440-02-0 | 0.1410 | 0.0485 J | 0.4060 | 0.2380 | 0.0178 J | 0.0414 J | 0.1140 | 0.0400 J | 0.0116 J | 0.0917 | 0.0336 J | 0.7330 | 1.0500 | 0.0112 J | 0.1540 | 0.0636 | 0.1880 | 0.0480 J |
| Silver TR | 7440-22-4 | | | | | 0.0019 J | | | | | | | 0.0014 J | | | | | | |
| Zinc | 7440-66-6 | 0.036 | 0.0122 J | 0.32 | 0.0285 | 0.0794 | 0.0402 | 0.015 J | 0.0746 | 0.0088 J | 0.0407 | 0.0084 J | 0.482 | 0.0739 | 0.0756 | 0.369 | 0.011 J | 0.389 | 0.0116 J |

Table 1

10 Year Data Summary of Detected Constituents in Monitoring and Effluent Wells
E.H. Schilling Landfill-Ironton, Ohio

| Sample ID / Sample Location / Sample Date / Sample Type / Well Type / Area | | MW-3A (4/24/02)<br>MW-3A<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-4B (4/24/02)<br>MW-4B<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-6A (4/24/02)<br>MW-6A<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-6B (4/24/02)<br>MW-6B<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-7B (4/24/02)<br>MW-7B<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | EW-1 (4/23/02)<br>EW-1<br>4/23/2002<br>Investigation<br>Extraction<br>Inside | EW-2 (4/23/02)<br>EW-2<br>4/23/2002<br>Investigation<br>Extraction<br>Inside | EW-3 (4/23/02)<br>EW-3<br>4/23/2002<br>Investigation<br>Extraction<br>Inside | EW-4 (4/23/02)<br>EW-4<br>4/23/2002<br>Investigation<br>Extraction<br>Outside |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemical | CAS No. | | | | | | | | | |
| VOCs (mg/L) | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | | | | | | | | |
| Trichloroethene | 79-01-6 | | | | | | | | | |
| 1,1,1-Trichloroethane | 71-55-6 | | | | 0.0001 J | | | | | |
| 1,1-Dichloroethane | 75-34-3 | | 0.0001 J | | 0.0003 J | | 0.001 J | 0.001 J | | |
| 1,1-Dichloroethene | 75-35-4 | | | | | | | | | |
| 1,2-Dichloroethane | 107-06-2 | | | 0.0029 | | | 0.022 | 0.022 | 0.013 | 0.004 J |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | | | | | |
| 2-Butanone | 78-93-3 | | | | | | | 0.004 J | 0.01 | |
| 2-Hexanone | 591-78-6 | | | | | | | | 0.008 J | |
| 4-Methyl-2-pentanone | 108-10-1 | | | | | | | | 0.011 | |
| Acetone | 67-64-1 | | | | | | | 0.015 J | 0.038 | |
| Benzene | 71-43-2 | | | | 0.0001 J | | 0.001 J | 0.005 J | 0.006 | |
| Bromomethane | 74-83-9 | | | | | | | | | |
| Carbon disulfide | 75-15-0 | | | 0.39 | | | | | | |
| Carbon tetrachloride | 56-23-5 | | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | | | | | 0.001 J | 0.001 J | |
| Chloroethane | 75-00-3 | | | 0.022 | | | 0.043 | 0.018 | 0.047 | 0.042 |
| Chloroform | 67-66-3 | | | | | | | | | |
| Chloromethane | 74-87-3 | | | | | | | | | |
| cis-1,2-Dichloroethene | 156-59-2 | | | | | | | 0.001 J | | |
| Ethylbenzene | 100-41-4 | | | | | | | 0.26 | 6.3 | |
| Methylene chloride | 75-09-2 | | | 0.0006 | | | 0.004 J | 0.006 | 0.004 J | |
| Styrene | 100-42-5 | | | | | | | | | |
| Tetrachloroethene | 127-18-4 | | | | | | | | | |
| Toluene | 108-88-3 | | | | 0.0001 J | | | 0.013 | 0.007 | |
| Xylene (total) | 1330-20-7 | | 0.0001 J | | 0.0003 J | | | 0.003 J | 0.025 | |
| SVOCs (mg/L) | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | | | | | |
| 2,4-Dimethylphenol | 105-67-9 | | | | | | | | | |
| 2,6-Dinitrotoluene | 606-20-2 | | | | | | | | | |
| 2-Methylphenol | 95-48-7 | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | | | | | | | | | |
| Naphthalene | 91-20-3 | | | | | | | | | |
| 3-Nitroaniline | 99-09-2 | | | | | | | | | |
| Nitrobenzene | 98-95-3 | | | | | | | | | |
| 4-Chloroaniline | 106-47-8 | | | | | | | | | |
| 4-Nitrophenol | 100-02-7 | | | | | | | | | |
| 4-Methylphenol | 106-44-5 | | | | | | | | 0.2 | |
| Anthracene | 120-12-7 | | | | | | | | | |
| Benzo(a)anthracene | 56-55-3 | | | | | | | | 0.018 J | |
| Benzo(a)pyrene | 50-32-8 | | | | | | | | 0.019 J | |
| Benzo(b)fluoranthene | 205-99-2 | | | | | | | | | |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | | | | |
| Benzo(k)fluoranthene | 207-08-9 | | | | | | | | | |
| Benzoic acid | 65-85-0 | | | | | | | | | |
| Benzyl alcohol | 100-51-6 | | | | | | | | | |
| bis(2-Chloroethyl)ether | 111-44-4 | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | | | | | | | |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | | | | | | | |
| Butyl benzyl phthalate | 85-68-7 | | | | | | | | | |
| Carbazole | 86-74-8 | | | | | | | | | |
| Chrysene | 218-01-9 | | | | | | | | 0.025 J | |
| Dibenz(a,h)anthracene | 53-70-3 | | | | | | | | | |
| Dibenzofuran | 132-64-9 | | | | | | | | | |
| Diethyl phthalate | 84-66-2 | | | | | | | | | |
| Dimethyl phthalate | 131-11-3 | | | | | | | | | |
| Di-n-butyl phthalate | 84-74-2 | | | | | | | | | |
| Di-n-octyl phthalate | 117-84-0 | | | | | | | | | |
| Fluoranthene | 206-44-0 | | | | | | | | | |
| Fluorene | 86-73-7 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | | | | | | | |
| Isophorone | 78-59-1 | | | | | | | | | |
| N-Nitrosodiphenylamine | 86-30-6 | | 0.012 | | | | | | | |
| Phenanthrene | 85-01-8 | | | | | | | | | |
| Phenol | 108-95-2 | | | 0.006 J | | | 0.026 | 0.043 J | 0.18 | |
| Pyrene | 129-00-0 | | | | | | | | 0.015 J | 0.037 |
| Pesticides/PCBs | | | | | | | | | | |
| Heptachlor | 76-44-8 | | | | | | | | | |
| delta-BHC | 319-86-7 | | | | | | | | | |
| Metals (mg/L) | | | | | | | | | | |
| Antimony | 7440-36-0 | | | | | | | | | |
| Arsenic TR | 7440-38-2 | | | 0.0182 | | 0.0324 | | | 0.0134 | 0.0104 |
| Beryllium | 7440-41-7 | | | 0.0026 | | 0.0016 J | | 0.001 J | | |
| Cadmium | 7440-43-9 | | | | | | | | | |
| Chromium | 7440-47-3 | 0.118 | 0.0364 | 0.186 | 1.81 | 0.0454 | | 0.0044 J | 0.0536 | |
| Copper | 7440-50-8 | 0.0316 | 0.0131 J | 0.0519 | 0.1430 | 0.0222 J | 0.0208 J | | 1.1800 | 0.0067 J |
| Cyanide, Total | 57-12-5 | | | | | | | | | |
| Lead | 7439-92-1 | 0.0152 J | | 0.0633 J | 0.0334 J | 0.0128 J | | | 0.219 | |
| Mercury | 7439-97-6 | | | | | | | | | |
| Nickel | 7440-02-0 | 0.0676 | 0.0489 J | 0.1820 | 0.7460 | 0.0223 | 0.2080 | 0.0078 J | 0.1980 | 0.0234 J |
| Silver TR | 7440-22-4 | | | | | | | | | |
| Zinc | 7440-66-6 | 0.0666 | 0.0188 J | 0.482 | 0.0481 | 0.083 | 0.0537 | 0.0114 J | 0.381 | 0.0173 J |

## Table 2

**Comparison of Detected Constituents in Wells Inside the Landfill to USEPA Drinking Water Standards and Health Advisories E.H. Schilling Landfill Groundwater Data, August 1993 to April 2002 Ironton, Ohio**

| Chemical | CAS No. | Maximum Detected Concentration (mg/L) | Sample Location and Date with Maximum Detect | Screening Value (mg/L) | Screening Value Type | Is Max. Det. Conc.> Screening Value |
|---|---|---|---|---|---|---|
| **VOCs** | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.53 | EW-1 (11/16/93) | 0.0003 | Lifetime HA | YES |
| Trichloroethene | 79-01-6 | 0.042 | EW-3 (11/16/93) | 0.005 | MCL | .YES |
| 1,1,1-Trichloroethane | 71-55-6 | 0.012 | EW-2 (6/05/96) | 0.2 | MCL | No |
| 1,1-Dichloroethane | 75-34-3 | 0.011 | EW-1 (8/17/95) | | | NA |
| 1,1-Dichloroethene | 75-35-4 | | | 0.007 | MCL | No |
| 1,2-Dichloroethane | 107-06-2 | 0.75 | EW-1 (3/15/95) | 0.005 | MCL | YES |
| 1,1,2-Trichloroethane | 79-00-5 | | | 0.005 | MCL | No |
| 2-Butanone | 78-93-3 | 1.5 | EW-3 (3/15/95) | 20 | DWEL | No |
| 2-Hexanone | 591-78-6 | 0.008 | EW-3 (4/10/01) | | | NA |
| 4-Methyl-2-pentanone | 108-10-1 | 0.072 | EW-3 (3/26/97) | | | NA |
| Acetone | 67-64-1 | 2.2 | EW-3 (8/17/95) | | | NA |
| Benzene | 71-43-2 | 0.01 | EW-1 (8/17/95) | 0.005 | MCL | YES |
| Bromomethane | 74-83-9 | 0.045 | EW-2 (5/23/95) | 0.01 | Lifetime HA | YES |
| Carbon disulfide | 75-15-0 | 0.24 | EW-1 (10/7/97) | | | NA |
| Carbon tetrachloride | 56-23-5 | | | 0.005 | MCL | No |
| Chlorobenzene | 108-90-7 | 0.002 | EW-2 (3/26/97) | 0.1 | MCL | No |
| Chloroethane | 75-00-3 | 0.75 | EW-1 (3/15/95) | | | NA |
| Chloroform | 67-66-3 | 0.22 | EW-3 (5/23/95) | 0.08 | MCL | YES |
| Chloromethane | 74-87-3 | 0.15 | EW-3 (9/26/94) | 0.003 | Lifetime HA | YES |
| cis-1,2-Dichloroethene | 156-59-2 | 0.004 | EW-2 (8/17/99) | 0.07 | MCL | No |
| Ethylbenzene | 100-41-4 | 19 | EW-3 (2/19/96) | 0.7 | MCL | YES |
| Methylene chloride | 75-09-2 | 0.93 | EW-2 (5/18/94) | 0.005 | MCL | YES |
| Styrene | 100-42-5 | | | 0.1 | MCL | No |
| Tetrachloroethene | 127-18-4 | 0.005 | EW-1 (10/7/97) | 0.005 | MCL | No |
| Toluene | 108-88-3 | 0.23 | EW-1 (3/15/95) | 1 | MCL | No |
| Xylene (total) | 1330-20-7 | 3.3 | EW-3 (2/23/94) | 10 | MCL | No |
| **SVOCs** | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | | | NA |
| 2,4-Dimethylphenol | 105-67-9 | 0.13 | EW-3 (5/23/95) | | | NA |
| 2,6-Dinitrotoluene | 606-20-2 | | | 0.04 | DWEL | No |
| 2-Methylphenol | 95-48-7 | 0.0084 | EW-1 (11/16/93) | | | NA |
| 2-Methylnaphthalene | 91-57-6 | 0.002 | EW-3 (9/18/00) | | | NA |
| Naphthalene | 91-20-3 | 0.0028 | EW-1 (6/05/96) | 0.1 | Lifetime HA | No |
| 3-Nitroaniline | 88-74-4 | 0.002 | EW-3 (4/10/01) | | | NA |
| Nitrobenzene | 98-95-3 | | | | | NA |
| 4-Chloroaniline | 106-47-8 | 0.0019 | EW-1 (5/23/95) | | | NA |
| 4-Nitrophenol | 100-02-7 | | | 0.06 | Lifetime HA | No |
| 4-Methylphenol | 106-44-5 | 1.9 | EW-3 (11/08/95) | | | NA |
| Anthracene | 120-12-7 | 0.01 | EW-3 (8/26/98) | 10 | DWEL | No |
| Benzo(a)anthracene | 56-55-3 | 0.12 | EW-3 (9/18/00) | | | NA |
| Benzo(a)pyrene | 50-32-8 | 0.099* | EW-3 (9/18/00) | 0.0002 | MCL | YES |
| Benzo(b)fluoranthene | 205-99-2 | 0.044 | EW-3 (9/18/00) | | | NA |
| Benzo(g,h,i)perylene | 191-24-2 | 0.038 | EW-3 (9/18/00) | | | NA |
| Benzo(k)fluoranthene | 207-08-9 | 0.011 | EW-3 (9/18/00) | | | NA |
| Benzoic acid | 65-85-0 | 4.5 | EW-3 (8/17/95) | | | NA |
| Benzyl alcohol | 100-51-6 | 0.0046 | EW-1 (5/23/95) | | | NA |
| bis(2-Chloroethyl)ether | 111-44-4 | 0.003 | EW-3 (3/26/97) | | | NA |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 0.011 | EW-2 (2/19/96) | | | NA |
| bis(2-Chloroisopropyl)ether | 108-60-1 | 0.044 | EW-3 (5/23/95) | 0.3 | Lifetime HA | No |
| Butyl benzyl phthalate | 85-68-7 | 0.002 | EW-2 (3/15/95) | 7 | DWEL | No |
| Carbazole | 86-74-8 | 0.002 | EW-3 (3/30/99) | | | NA |
| Chrysene | 218-01-9 | 0.16 | EW-3 (9/18/00) | | | NA |

**Table 2**

**Comparison of Detected Constituents in Wells Inside the Landfill to USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill Groundwater Data, August 1993 to April 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Maximum Detected Concentration (mg/L) | Sample Location and Date with Maximum Detect | Screening Value (mg/L) | Screening Value Type | Is Max. Det. Conc.> Screening Value |
|---|---|---|---|---|---|---|
| Dibenz(a,h)anthracene | 53-70-3 | 0.017 | EW-3 (9/18/00) | | | NA |
| Dibenzofuran | 132-64-9 | | | | | NA |
| Diethyl phthalate | 84-66-2 | | | 30 | DWEL | No |
| Dimethyl phthalate | 131-11-3 | | | | | NA |
| Di-n-butyl phthalate | 84-74-2 | 0.0031 | EW-3 (9/26/94) | | | NA |
| Di-n-octyl phthalate | 117-84-0 | | | | | NA |
| Fluoranthene | 206-44-0 | 0.012 | EW-3 (9/18/00) | | | NA |
| Fluorene | 86-73-7 | 0.001 | EW-3 (9/18/00) | 1 | DWEL | No |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.016 | EW-3 (9/18/00) | | | NA |
| Isophorone | 78-59-1 | | | 0.1 | Lifetime HA | No |
| N-Nitrosodiphenylamine | 86-30-6 | | | | | NA |
| Phenanthrene | 85-01-8 | 0.023 | EW-3 (9/18/00) | | | NA |
| Phenol | 108-95-2 | 0.77 | EW-3 (2/19/96) | 4 | Lifetime HA | No |
| Pyrene | 129-00-0 | 0.079 | EW-3 (9/18/00) | | | NA |
| **Pesticides/PCBs** | | | | | | |
| Heptachlor | 76-44-8 | 0.00034 | EW-3 (2/23/94) | | | NA |
| delta-BHC | 319-85-7 | 0.000071 | EW-1 (3/15/95) | | | NA |
| **Metals** | | | | | | |
| Antimony | 7440-36-0 | | | 0.006 | MCL | No |
| Arsenic TR | 7440-38-2 | 0.0174 | EW-2 (9/26/94) | 0.05 | MCL | No |
| Beryllium | 7440-41-7 | 0.0053 | MW-8A (12/14/94) | 0.004 | MCL | YES |
| Cadmium | 7440-43-9 | 0.185 | EW-3 (11/16/93) | 0.005 | MCL | YES |
| Chromium | 7440-47-3 | 1.2 | EW-3 (3/15/95) | 0.1 | MCL | YES |
| Copper | 7440-50-8 | 1.19 | EW-3 (4/23/02) | 1.3 | Action Level | No |
| Cyanide, Total | 57-12-5 | 0.017 | EW-3 (2/19/96) | 0.2 | MCL | No |
| Lead | 7439-92-1 | 0.219 | EW-3 (4/23/02) | 0.015 | Action Level | YES |
| Mercury | 7439-97-6 | 0.00054 | EW-1 (3/26/97) | 0.002 | MCL | No |
| Nickel | 7440-02-0 | 0.845 | EW-3 (3/15/95) | 0.1 | Lifetime HA | YES |
| Silver TR | 7440-22-4 | 0.0021 | EW-3 (8/17/99) | 0.1 | Lifetime HA | No |
| Zinc | 7440-66-6 | 0.649 | EW-1 (3/30/99) | 2 | Lifetime HA | No |

* The solubility for benzo(a)pyrene is 0.0038 mg/L, therefore the concentration of 0.099 mg/L can be attributed to suspended solids in the sample.
DWEL-Drinking Water Equivalent Level
Action Level- The concentration of a contaminant which, if exceeded, triggers treament or other requirments which a water system must follow
Lifetime HA (Health Advisory)- The concentration of a chemical in drinking water that is not expected to cause adverse noncarcinogenic effects for a lifetime of exposure.

**Table 3** **Comparison of Detected Constituents in Wells Outside the Landfill to USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill Groundwater Data, August 1993 to April 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Maximum Detected Concentration (mg/L) | Sample Location and Date with Maximum Detect | Screening Value (mg/L) | Screening Value Type | Is Max. Det. Conc.> Screening Value |
|---|---|---|---|---|---|---|
| **VOCs** | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.0078 | EW-4 (11/16/93) | 0.0003 | Lifetime HA | YES |
| Trichloroethene | 79-01-6 | 0.0001 | MW-4B (3/26/97) | 0.005 | MCL | No |
| 1,1,1-Trichloroethane | 71-55-6 | 0.093 | MW-5A (3/15/95) | 0.2 | MCL | No |
| 1,1-Dichloroethane | 75-34-3 | 0.0086 | MW-6A (9/25/96) | | | NA |
| 1,1-Dichloroethene | 75-35-4 | 0.0029 | MW-6A (3/31/99) | 0.007 | MCL | No |
| 1,2-Dichloroethane | 107-06-2 | 0.04 | MW-7B (11/9/95) | 0.005 | MCL | YES |
| 1,1,2-Trichloroethane | 79-00-5 | 0.0002 | MW-5B (11/9/95) | 0.005 | MCL | No |
| 2-Butanone | 78-93-3 | 0.0093 | MW-4B (4/06/00) | 20 | DWEL | No |
| 2-Hexanone | 591-78-6 | 0.0011 | MW-2B (8/18/99) | | | NA |
| 4-Methyl-2-pentanone | 108-10-1 | 0.0042 | MW-7B (9/27/94) | | | NA |
| Acetone | 67-64-1 | 0.34 | MW-5A (11/9/95) | | | NA |
| Benzene | 71-43-2 | 0.0058 | EW-4 (8/17/95) | 0.005 | MCL | YES |
| Bromomethane | 74-83-9 | 0.0029 | MW-3A (12/14/94) | 0.01 | Lifetime HA | No |
| Carbon disulfide | 75-15-0 | 0.99 | MW-6A (4/11/01) | | | NA |
| Carbon tetrachloride | 56-23-5 | 0.031 | MW-3A (9/27/94) | 0.005 | MCL | YES |
| Chlorobenzene | 108-90-7 | | | 0.1 | MCL | No |
| Chloroethane | 75-00-3 | 0.073 | EW-4 (8/17/95) | | | NA |
| Chloroform | 67-66-3 | 0.0001 | MW-3A (3/31/98) | 0.08 | MCL | No |
| Chloromethane | 74-87-3 | 0.12 | EW-4 (9/26/94) | 0.003 | Lifetime HA | YES |
| cis-1,2-Dichloroethene | 156-59-2 | | | 0.07 | MCL | No |
| Ethylbenzene | 100-41-4 | 2.6 | MW-7B (11/9/95) | 0.7 | MCL | YES |
| Methylene chloride | 75-09-2 | 0.064 | EW-4 (9/18/00) | 0.005 | MCL | YES |
| Styrene | 100-42-5 | 0.0022 | MW-5B (11/9/95) | 0.1 | MCL | No |
| Tetrachloroethene | 127-18-4 | 0.0009 | MW-2B (8/17/95) | 0.005 | MCL | No |
| Toluene | 108-88-3 | 0.05 | MW-7B (11/9/95) | 1 | MCL | No |
| Xylene (total) | 1330-20-7 | 0.053 | EW-4 (3/15/95) | 10 | MCL | No |
| **SVOCs** | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | 0.00086 | MW-5B (5/23/95) | | | NA |
| 2,4-Dimethylphenol | 105-67-9 | 0.0042 | MW-7B (9/27/94) | | | NA |
| 2,6-Dinitrotoluene | 606-20-2 | 0.004 | MW-4B (8/26/98) | 0.04 | DWEL | No |
| 2-Methylphenol | 95-48-7 | 0.003 | MW-7B (11/9/95) | | | NA |
| 2-Methylnaphthalene | 91-57-6 | | | | | NA |
| Naphthalene | 91-20-3 | 0.009 | MW-7B (8/26/98) | 0.1 | Lifetime HA | No |
| 3-Nitroaniline | 88-74-4 | | | | | NA |
| Nitrobenzene | 98-95-3 | 0.01 | MW-4B (3/26/97) | | | NA |
| 4-Chloroaniline | 106-47-8 | | | | | NA |
| 4-Nitrophenol | 100-02-7 | 0.0022 | MW-7B (3/15/95) | 0.06 | Lifetime HA | No |
| 4-Methylphenol | 106-44-5 | 0.21 | MW-7B (11/9/95) | | | NA |
| Anthracene | 120-12-7 | 0.01 | MW-6B (8/26/98) | 10 | DWEL | No |
| Benzo(a)anthracene | 56-55-3 | 0.002 | MW-2B (3/15/95) | | | NA |
| Benzo(a)pyrene | 50-32-8 | 0.0016 | MW-2B (3/15/95) | 0.0002 | MCL | YES |
| Benzo(b)fluoranthene | 205-99-2 | 0.0021 | MW-2B (3/15/95) | | | NA |
| Benzo(g,h,i)perylene | 191-24-2 | 0.0014 | MW-7B (3/15/95) | | | NA |
| Benzo(k)fluoranthene | 207-08-9 | 0.009 | MW-6B (8/26/98) | | | NA |
| Benzoic acid | 65-85-0 | 0.0091 | MW-5A (5/23/95) | | | NA |
| Benzyl alcohol | 100-51-6 | 0.0018 | MW-7B (11/9/95) | | | NA |
| bis(2-Chloroethyl)ether | 111-44-4 | 0.0034 | MW-6A (5/23/95) | | | NA |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 0.021 | MW-7B (8/26/98) | | | NA |
| bis(2-Chloroisopropyl)ether | 108-60-1 | | | 0.3 | Lifetime HA | No |
| Butyl benzyl phthalate | 85-68-7 | 0.0026 | MW-2B (3/15/95) | 7 | DWEL | No |
| Carbazole | 86-74-8 | 0.002 | MW-2B (3/15/95) | | | NA |
| Chrysene | 218-01-9 | 0.0016 | MW-2B (3/15/95) | | | NA |

**Table 3** — **Comparison of Detected Constituents in Wells Outside the Landfill to USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill Groundwater Data, August 1993 to April 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Maximum Detected Concentration (mg/L) | Sample Location and Date with Maximum Detect | Screening Value (mg/L) | Screening Value Type | Is Max. Det. Conc.> Screening Value |
|---|---|---|---|---|---|---|
| Dibenz(a,h)anthracene | 53-70-3 | 0.0016 | MW-2B (3/15/95) | | | NA |
| Dibenzofuran | 132-64-9 | 0.011 | MW-6B (8/26/98) | | | NA |
| Diethyl phthalate | 84-66-2 | 0.037 | MW-6B (8/26/98) | 30 | DWEL | No |
| Dimethyl phthalate | 131-11-3 | 0.01 | MW-5B (3/15/95) | | | NA |
| Di-n-butyl phthalate | 84-74-2 | 0.008 | MW-2B (8/26/98) | | | NA |
| Di-n-octyl phthalate | 117-84-0 | 0.008 | MW-6B (8/26/98) | | | NA |
| Fluoranthene | 206-44-0 | 0.009 | MW-6B (8/26/98) | | | NA |
| Fluorene | 86-73-7 | | | 1 | DWEL | No |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.0018 | MW-2B (3/15/95) | | | NA |
| Isophorone | 78-59-1 | 0.002 | MW-2B (3/31/98) | 0.1 | Lifetime HA | No |
| N-Nitrosodiphenylamine | 86-30-6 | 0.012 | MW-4B (4/24/02) | | | NA |
| Phenanthrene | 85-01-8 | 0.009 | MW-6B (8/26/98) | | | NA |
| Phenol | 108-95-2 | 0.12 | MW-7B (11/9/95) | 4 | Lifetime HA | No |
| Pyrene | 129-00-0 | 0.037 | EW-4 (4/23/02) | | | NA |
| **Pesticides/PCBs** | | | | | | |
| Heptachlor | 76-44-8 | | | | | NA |
| delta-BHC | 319-85-7 | | | | | NA |
| **Metals** | | | | | | |
| Antimony | 7440-36-0 | 0.14 | MW-2B (9/27/94) | 0.006 | MCL | **YES** |
| Arsenic TR | 7440-38-2 | 0.23 | MW-6A (8/26/98) | 0.05 | MCL | **YES** |
| Beryllium | 7440-41-7 | 0.051 | MW-6A (8/26/98) | 0.004 | MCL | **YES** |
| Cadmium | 7440-43-9 | 0.66 | EW-4 (11/16/93) | 0.005 | MCL | **YES** |
| Chromium | 7440-47-3 | 6.96 | MW-6A (8/26/98) | 0.1 | MCL | **YES** |
| Copper | 7440-50-8 | 1.98 | MW-3A (2/21/96) | 1.3 | Action Level | **YES** |
| Cyanide, Total | 57-12-5 | | | 0.2 | MCL | No |
| Lead | 7439-92-1 | 1.01 | MW-5B (5/23/95) | 0.015 | Action Level | **YES** |
| Mercury | 7439-97-6 | 0.00066 | MW-4B (12/14/94) | 0.002 | MCL | No |
| Nickel | 7440-02-0 | 5.01 | MW-6A (8/26/98) | 0.1 | Lifetime HA | **YES** |
| Silver TR | 7440-22-4 | 0.0022 | MW-4B (9/19/00) | 0.1 | Lifetime HA | No |
| Zinc | 7440-66-6 | 1.89 | MW-6A (8/26/98) | 2 | Lifetime HA | No |

DWEL-Drinking Water Equivalent Level
Action Level- The concentration of a contaminant which, if exceeded, triggers treament or other requirments which a water system must follow
Lifetime HA (Health Advisory)- The concentration of a chemical in drinking water that is not expected to cause adverse noncarcinogenic effects for a lifetime of exposure.

**Table 4**

**Comparison of Detected Total Metals Data from the April 2002 Sampling Event to Current USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill**
**Ironton, Ohio**

| Chemical | Sample ID<br>Sample Location<br>Sample Date<br>Sample Type<br>Well Type<br>Area<br>CAS No. | USEPA Screening Value | | MW-3A (4/24/02)<br>MW-3A<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-4B (4/24/02)<br>MW-4B<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-6A (4/24/02)<br>MW-6A<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-6B (4/24/02)<br>MW-6B<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside | MW-7B (4/24/02)<br>MW-7B<br>4/24/2002<br>Investigation<br>Monitoring<br>Outside |
|---|---|---|---|---|---|---|---|---|
| **Metals (mg/L)** | | | | | | | | |
| Antimony | 7440-36-0 | 0.006 | MCL | | | | | |
| Arsenic TR | 7440-38-2 | 0.05 | MCL | | | 0.0162 | | 0.0324 |
| Beryllium | 7440-41-7 | 0.004 | MCL | | | 0.0025 | | 0.0016 J |
| Cadmium | 7440-43-9 | 0.005 | MCL | | | | | |
| Chromium | 7440-47-3 | 0.1 | MCL | 0.118 | 0.0364 | 0.165 | 1.61 | 0.0454 |
| Copper | 7440-50-8 | 1.3 | Action Level | 0.0316 | 0.0131 J | 0.0519 | 0.1430 | 0.0222 J |
| Cyanide, Total | 57-12-5 | 0.2 | MCL | | | | | |
| Lead | 7439-92-1 | 0.015 | Action Level | 0.0152 J | | 0.0533 J | 0.0334 J | 0.0126 J |
| Mercury | 7439-97-6 | 0.002 | MCL | | | | | |
| Nickel | 7440-02-0 | 0.1 | Lifetime HA | 0.0876 | 0.0459 J | 0.1820 | 0.7450 | 0.0223 |
| Silver TR | 7440-22-4 | 0.1 | Lifetime HA | | | | | |
| Zinc | 7440-66-6 | 2 | Lifetime HA | 0.0668 | 0.0155 J | 0.482 | 0.0481 | 0.083 |

Note:
Shaded cells indicate an exceedence of USEPA Drinking Water Criteria

## Table 4

**Comparison of Detected Total Metals Data from the April 2002 Sampling Event to Current USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill**
**Ironton, Ohio**

| Chemical | Sample ID<br>Sample Location<br>Sample Date<br>Sample Type<br>Well Type<br>Area<br>CAS No. | USEPA Screening Value | | EW-1 (4/23/02)<br>EW-1<br>4/23/2002<br>Investigation<br>Extraction<br>Inside | EW-2 (4/23/02)<br>EW-2<br>4/23/2002<br>Investigation<br>Extraction<br>Inside | EW-3 (4/23/02)<br>EW-3<br>4/23/2002<br>Investigation<br>Extraction<br>Inside | EW-4 (4/23/02)<br>EW-4<br>4/23/2002<br>Investigation<br>Extraction<br>Outside |
|---|---|---|---|---|---|---|---|
| **Metals (mg/L)** | | | | | | | |
| Antimony | 7440-36-0 | 0.006 | MCL | | | | |
| Arsenic TR | 7440-38-2 | 0.05 | MCL | | | 0.0134 | 0.0104 |
| Beryllium | 7440-41-7 | 0.004 | MCL | | 0.001 J | | |
| Cadmium | 7440-43-9 | 0.005 | MCL | | | | |
| Chromium | 7440-47-3 | 0.1 | MCL | | 0.0044 J | 0.0536 | |
| Copper | 7440-50-8 | 1.3 | Action Level | 0.0208 J | | 1.1900 | 0.0067 J |
| Cyanide, Total | 57-12-5 | 0.2 | MCL | | | | |
| Lead | 7439-92-1 | 0.015 | Action Level | | | 0.219 | |
| Mercury | 7439-97-6 | 0.002 | MCL | | | | |
| Nickel | 7440-02-0 | 0.1 | Lifetime HA | 0.2060 | 0.0078 J | 0.1950 | 0.0234 J |
| Silver TR | 7440-22-4 | 0.1 | Lifetime HA | | | | |
| Zinc | 7440-66-6 | 2 | Lifetime HA | 0.0537 | 0.0114 J | 0.361 | 0.0173 J |

Note:
Shaded cells indicate an exceedence of USEPA Drinking Water Criteria

**Table 5**

**Comparison of Maximum Detected Constituents in Wells Inside the Landfill to April 2002 Maximum Detected Constituents in Wells Inside the Landfill**
**E.H. Schilling Landfill Groundwater Data, August 1993 to April 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Maximum Detected Concentration (1993-2002) (mg/L) | Sample with Maximum Detect | Screening Value (mg/L) | Screening Value Type | Maximum Detected Concentration in April 2002 (mg/L) | Is Max. Det. April 2002 Conc. > Screening Value | |
|---|---|---|---|---|---|---|---|---|
| **VOCs** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.53 | EW-1 (11/16/93) | 0.0003 | Lifetime HA | ND | NA | |
| Trichloroethene | 79-01-6 | 0.042 | EW-3 (11/16/93) | 0.005 | MCL | ND | NA | |
| 1,2-Dichloroethane | 107-06-2 | 0.75 | EW-1 (3/15/95) | 0.005 | MCL | 0.022 | **YES** | 4.4xMCL |
| Benzene | 71-43-2 | 0.01 | EW-1 (8/17/95) | 0.005 | MCL | 0.006 | **YES** | 1.2xMCL |
| Bromomethane | 74-83-9 | 0.045 | EW-2 (5/23/95) | 0.01 | Lifetime HA | ND | NA | |
| Chloroform | 67-66-3 | 0.22 | EW-3 (5/23/95) | 0.08 | MCL | ND | NA | |
| Chloromethane | 74-87-3 | 0.15 | EW-3 (9/26/94) | 0.003 | Lifetime HA | ND | NA | |
| Ethylbenzene | 100-41-4 | 19 | EW-3 (2/19/96) | 0.7 | MCL | 5.3 | **YES** | 7.5xMCL |
| Methylene chloride | 75-09-2 | 0.93 | EW-2 (5/18/94) | 0.005 | MCL | 0.006 | **YES** | 1.2xMCL |
| **SVOCs** | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | 0.099* | EW-3 (9/18/00) | 0.0002 | MCL | .019J* | **YES** | |
| **Metals** | | | | | | | | |
| Beryllium | 7440-41-7 | 0.0053 | MW-8A (12/14/94) | 0.004 | MCL | .0001J | No | |
| Cadmium | 7440-43-9 | 0.185 | EW-3 (11/16/93) | 0.005 | MCL | ND | NA | |
| Chromium | 7440-47-3 | 1.2 | EW-3 (3/15/95) | 0.1 | MCL | 0.0536 | No | |
| Lead | 7439-92-1 | 0.219 | EW-3 (4/23/02) | 0.015 | Action Level | 0.219 | **YES** | 14.6xAL |
| Nickel | 7440-02-0 | 0.845 | EW-3 (3/15/95) | 0.1 | Lifetime HA | 0.206 | **YES** | 2.06xLHA |

* The solubility for benzo(a)pyrene is 0.0038 mg/L, therefore the concentrations of 0.099mg/L and 0.019J mg/L can be attributed to suspended solids in the samples.

**Table 6**

**Comparison of Maximum Detected Constituents in Wells Outside the Landfill to April 2002 Maximum Detected Concentrations in Wells Outside the Landfill E.H. Schilling Landfill Groundwater Data, August 1993 to April 2002 Ironton, Ohio**

| Chemical | CAS No. | Maximum Detected Concentration (1993-2002) (mg/L) | Sample with Maximum Detect | Screening Value (mg/L) | Screening Value Type | Maximum Detected Concentration in April 2002 (mg/L) | Is Max. Det. April 2002 Conc. > Screening Value | |
|---|---|---|---|---|---|---|---|---|
| **VOCs** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.0078 | EW-4 (11/16/93) | 0.0003 | Lifetime HA | ND | NA | |
| 1,2-Dichloroethane | 107-06-2 | 0.04 | MW-7B (11/9/95) | 0.005 | MCL | .004J | No | |
| Benzene | 71-43-2 | 0.0058 | EW-4 (8/17/95) | 0.005 | MCL | .0001J | No | |
| Carbon tetrachloride | 56-23-5 | 0.031 | MW-3A (9/27/94) | 0.005 | MCL | ND | NA | |
| Chloromethane | 74-87-3 | 0.12 | EW-4 (9/26/94) | 0.003 | Lifetime HA | ND | NA | |
| Ethylbenzene | 100-41-4 | 2.6 | MW-7B (11/9/95) | 0.7 | MCL | ND | NA | |
| Methylene chloride | 75-09-2 | 0.064 | EW-4 (9/18/00) | 0.005 | MCL | 0.0096 | **YES** | 1.92xMCL |
| **SVOCs** | | | | | | | | |
| Benzo(a)pyrene | 50-32-8 | 0.0016 | MW-2B (3/15/95) | 0.0002 | MCL | ND | NA | |
| **Metals** | | | | | | | | |
| Antimony | 7440-36-0 | 0.14 | MW-2B (9/27/94) | 0.006 | MCL | ND | NA | |
| Arsenic TR | 7440-38-2 | 0.23 | MW-6A (8/26/98) | 0.05 | MCL | 0.0324 | No | |
| Beryllium | 7440-41-7 | 0.051 | MW-6A (8/26/98) | 0.004 | MCL | 0.0025 | No | |
| Cadmium | 7440-43-9 | 0.66 | EW-4 (11/16/93) | 0.005 | MCL | ND | NA | |
| Chromium | 7440-47-3 | 6.96 | MW-6A (8/26/98) | 0.1 | MCL | 1.61 | **YES** | 16.1xMCL |
| Copper | 7440-50-8 | 1.98 | MW-3A (2/21/96) | 1.3 | Action Level | 0.143 | No | |
| Lead | 7439-92-1 | 1.01 | MW-5B (5/23/95) | 0.015 | Action Level | .0533J | **YES** | 3.55xAL |
| Nickel | 7440-02-0 | 5.01 | MW-6A (8/26/98) | 0.1 | Lifetime HA | 0.745 | **YES** | 7.45xLHA |

**Attachment 1**

## Documents Reviewed

Consent Decree - July 18, 1989
Feasibility Study for the E.H. Schilling Landfill - August 1989
Record of Decision - September 1989
Leachate Treatment System Operation and Maintenance Plan - August 1993
Preliminary Close Out Report for the E.H. Schilling Landfill - August 1993
Five-Year Review , E. H. Schilling Landfill - September 1997
First Semi-Annual Groundwater Monitoring Report - June 2002
E.H. Schilling Landfill 5-Year Review - July 25, 2002
E.H. Schilling Landfill Superfund Site Five-Year Review - July 25, 2002
E.H. Schilling Landfill Superfund Site Activities - July 26, 2002
Schilling Landfill Status Report - August 8, 2002
E.H. Schilling Landfill 5-Year Review Surface Water and Seep Sampling - August 16, 2002
E.H. Schilling Landfill 5-Year Review (Deed Documents) - August 22, 2002
E.H. Schilling Landfill Superfund Site Five-year Review - August 29, 2002

## Attachment 2

| Applicable or Relevant and Appropriate Requirements | | | | |
|---|---|---|---|---|
| **Federal ARARs** | | | | |
| **Authority** | **ARAR** | **Status** | **Requirement Synopsis** | **Action to be taken to Attain ARAR** |
| RCRA | 40 CFR 264.10 - 264.8 Standards for owners and operators of permitted hazardous waste facilities | Applicable | General facility requirements outline general waste analysis, security measures, inspections, and training requirements | Any facility will be constructed, fenced, posted, and operated in accordance with this requirement. Process wastes will be evaluated for the characteristics of hazardous wastes to assess further handling requirements. |
| RCRA | 40 CFR 264.70 - 264.77 Manifesting, Record keeping and Reporting | Applicable | This regulation specifies the record keeping and reporting requirements for RCRA facilities | Any off-site disposal of hazardous waste will be properly manifested. |
| CAA | 40 CFR 129.105, 750 | Applicable | Specifies maximum primary and secondary 24-hour concentrations for particulate matter | Fugitive dust emissions from site excavations activities will be maintained below 260 ug/m3 (primary standard) by dust suppressants, if necessary. |

| Authority | ARAR | Status | Requirement Synopsis | Action to be taken to Attain ARAR |
|---|---|---|---|---|
| Protection of Archaeological Resources | 32 CFR Part 229.4; 43 CFR Parts 107, 171.1 - 171.5 | Applicable | These regulations develop procedures for the protection of archaeological resources. | If archaeological resources are encountered during soil excavation or treatment, work will stop until the area has been reviewed by Federal and state archaeologists. |
| RCRA | 40 CFR 261 | Applicable | Specifies the characteristics of hazardous waste (CHW) | Solid wastes generated from on-site activities must be evaluated for CHW prior to disposal or treatment. |
| D.O.T | 49 CFR Parts 107, 171.1 - 171.5 Rules for the Transportation of Hazardous Materials | Applicable | Outlines procedures for the packaging, labeling, manifesting, and transportation of hazardous materials | Contaminated material will be packaged, manifested, and transported to a permitted offsite facility in compliance with these regulations. |
| State ARARs - Note: NREPA refers to Ohio's PA451, as amended, 1994, the Natural Resources and Environmental Protection Act | | | | |
| NREPA | Part 55 | Applicable | Outlines permitting requirements to install, construct, reconstruct, relocate, or alter any process, fuelburning equipment, or control equipment which may be a source of an air contaminant. | Only substantive provisions contained in these regulations are required for on-site activities. |

| Authority | ARAR | Status | Requirement Synopsis | Action to be taken to Attain ARAR |
|---|---|---|---|---|
| NREPA | Part 55 | Applicable | Outlines requirements for prohibiting emission of air contaminants of water vapors in quantities that cause, alone or in reaction with other air contaminants, either of the following: (a) Injurious effects to human health or safety, animal life, plant life of significant economic value or property; (b) Unreasonable interference with comfortable enjoyment of life and property. | Actions required by U.S. EPA to limit emissions from onsite units or activities that will adversely affect ambient air quality. |
| NREPA | Part 31 | Relevant and Appropriate | Outlines general requirements for management of hazardous waste facilities in Ohio | During the implementation of any site activities, these requirements will be considered and followed when appropriate. Generally, they are expected to be relevant and appropriate to the same extent as the RCRA standards. |
| NREPA | Part 31 | Relevant and Appropriate | Outlines the rules to protect the public health and welfare and to maintain the quality of groundwater in all usable aquifers for individual, public, industrial, and agricultural water supplies. | Actions required to maintain quality of the groundwater |

| Authority | ARAR | Status | Requirement Synopsis | Action to be taken to Attain ARAR |
|---|---|---|---|---|
| NREPA | Part 201 | Relevant and Appropriate | Presents the substantive criteria and procedures for evaluating cleanup of CERCLA type hazardous waste sites in Ohio. | The substantive criteria for establishing cleanup standards and remedial action activities at the site |
| NREPA | Part 303 | Relevant and Appropriate | Outlines requirements for conservation of wetlands whose capacity for erosion control serves as a sedimentation area and filtering basin absorbing silt and organic matter | Actions required to maintain the soil erosion control capabilities of wetlands onsite. |

**Attachment 3**

Table 2

**Comparison of Detected Constituents in Seep and Surface Water Samples to USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill Surface Water and Seep Data, July 2, 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Screening Value (mg/L) | Screening Value Type | Seep 1 (mg/L) | Seep 2 (mg/L) | Seep 3 (mg/L) | Seep 4 (mg/L) | Seep 5 (mg/L) | Is Max. Det. Conc.> Screening Value: Seep 1 | Seep 2 | Seep 3 | Seep 4 | Seep 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs** | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.0003 | Lifetime HA | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Trichloroethene | 79-01-6 | 0.005 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| 1,1,1-Trichloroethane | 71-55-6 | 0.2 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| 1,1-Dichloroethane | 75-34-3 | | | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| 1,1-Dichloroethene | 75-35-4 | 0.007 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| 1,2-Dichloroethane | 107-06-2 | 0.005 | MCL | 0.0008 J | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | No | NA | NA | NA | NA |
| 1,1,2-Trichloroethane | 79-00-5 | 0.005 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| 1,2-Dichloropropane | 78-87-5 | 0.005 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| 2-Butanone | 78-93-3 | 20 | DWEL | < 0.002 | < 0.002 | < 0.002 | < 0.002 | < 0.002 | NA | NA | NA | NA | NA |
| 2-Hexanone | 591-78-6 | | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| 4-Methyl-2-pentanone | 108-10-1 | | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| Acetone | 67-64-1 | | | < 0.002 | < 0.002 | < 0.002 | < 0.002 | < 0.002 | NA | NA | NA | NA | NA |
| Benzene | 71-43-2 | 0.005 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Bromomethane | 74-83-9 | 0.01 | Lifetime HA | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Bromodichloromethane | 75-27-4 | 0.08 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Bromoform | 75-25-2 | 0.08 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Carbon disulfide | 75-15-0 | | | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Carbon tetrachloride | 56-23-5 | 0.005 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Chlorobenzene | 108-90-7 | 0.1 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Chloroethane | 75-00-3 | | | 0.0089 | 0.001 J | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Chloroform | 67-66-3 | 0.08 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Chloromethane | 74-87-3 | 0.003 | Lifetime HA | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Dibromochloromethane | 124-48-1 | 0.08 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| cis-1,2-Dichloroethene | 156-59-2 | 0.07 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| trans-1,2-dichloroethene | 156-60-5 | 0.1 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| cis-1,3-Dichloropropene | 10060-01-5 | | | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| trans-1,3-dichloropropene | 10061-02-6 | | | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Ethylbenzene | 100-41-4 | 0.7 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Methylene Chloride | 75-09-2 | 0.005 | MCL | 0.0029 | 0.0006 J | < 0.0002 | < 0.0002 | < 0.0002 | No | No | NA | NA | NA |
| Styrene | 100-42-5 | 0.1 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Tetrachloroethene | 127-18-4 | 0.005 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Toluene | 108-88-3 | 1 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Vinyl Chloride | 75-01-4 | 0.002 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |
| Xylene (total) | 1330-20-7 | 10 | MCL | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.0001 | NA | NA | NA | NA | NA |

~~Table 2~~

**Comparison of Detected Constituents in Seep and Surface Water Samples to USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill Surface Water and Seep Data, July 2, 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Screening Value (mg/L) | Screening Value Type | Seep 1 (mg/L) | Seep 2 (mg/L) | Seep 3 (mg/L) | Seep 4 (mg/L) | Seep 5 (mg/L) | Is Max. Det. Conc.> Screening Value: Seep 1 | Seep 2 | Seep 3 | Seep 4 | Seep 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SVOCs | | | | | | | | | | | | | |
| 2-Methyl-4,6-Dinitrophenol | 534-52-1 | | | < 0.002 | < 0.002 | < 0.002 | < 0.002 | < 0.002 | NA | NA | NA | NA | NA |
| 2,4-Dimethylphenol | 105-67-9 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2,4-Dichlorophenol | 120-83-2 | 0.02 | Lifetime HA | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 4-Chloro-3-methylphenol | 59-50-7 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2,4,6-Trichlorophenol | 88-06-2 | 0.01 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2,6-Dinitrotoluene | 606-20-2 | 0.04 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2-Chlorophenol | 95-57-8 | 0.04 | Lifetime HA | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2-Methylphenol | 95-48-7 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2,2'-oxybis(1-Chloropropane) | 108-60-1 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | 91-57-6 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2,4,5-Trichlorophenol | 95-95-4 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Naphthalene | 91-20-3 | 0.1 | Lifetime HA | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Hexachlorobutadiene | 87-68-3 | 0.07 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Hexachlorocyclopentadiene | 77-47-4 | 0.05 | MCL | < 0.002 | < 0.002 | < 0.002 | < 0.002 | < 0.002 | NA | NA | NA | NA | NA |
| 2-Chloronapthalene | 91-58-7 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2-Nitroaniline | 88-74-4 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Nitrobenzene | 98-95-3 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 4-Chloroaniline | 106-47-8 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 2-Nitrophenol | 88-75-5 | 0.06 | Lifetime HA | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 1,3-Dichlorobenzene | 541-73-1 | 0.6 | Lifetime HA | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 1,4-Dichlorobenzene | 106-46-7 | 0.075 | MCL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 1,2-Dichlorobenzene | 95-50-1 | 0.6 | MCL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Hexachloroethane | 67-72-1 | 0.04 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| N-Nitroso-di-n-propylamine | 621-64-7 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 4-Methylphenol | 106-44-5 | | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| Anthracene | 120-12-7 | 10 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Acenapthylene | 208-96-8 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Acenapthene | 83-32-9 | 2 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Dimethylphthalate | 131-11-3 | | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| 2,4-Dinitrophenol | 51-28-5 | | | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | NA | NA | NA | NA | NA |
| 4-Nitrophenol | 100-02-7 | 0.06 | Lifetime HA | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | NA | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | 121-14-2 | 0.1 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Benzo(a)anthracene | 56-55-3 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Benzo(a)pyrene | 50-32-8 | 0.0002 | MCL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Benzo(b)fluoranthene | 205-99-2 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Benzo(k)fluoranthene | 207-08-9 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 3,3'-Dichlorobenzidine | 91-94-1 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |

~~Table 2~~

**Comparison of Detected Constituents in Seep and Surface Water Samples to USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill Surface Water and Seep Data, July 2, 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Screening Value (mg/L) | Screening Value Type | Seep 1 (mg/L) | Seep 2 (mg/L) | Seep 3 (mg/L) | Seep 4 (mg/L) | Seep 5 (mg/L) | Is Max. Det. Conc.> Screening Value: Seep 1 | Seep 2 | Seep 3 | Seep 4 | Seep 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| bis(2-Chloroethyl)ether | 111-44-4 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | | | < 0.001 | 0.002 J | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| bis(2-Chloroethoxy)methane | 111-91-1 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 1,2,4-Trichlorobenzene | 120-82-1 | 0.07 | MCL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Butyl benzyl phthalate | 85-68-7 | 7 | DWEL | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| Carbazole | 86-74-8 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Chrysene | 218-01-9 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Dibenzofuran | 132-64-9 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 3-Nitroaniline | 99-09-2 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| 4-Nitroaniline | 100-01-6 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Diethyl phthalate | 84-66-2 | 30 | DWEL | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| Di-n-butyl phthalate | 84-74-2 | 4 | DWEL | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| Di-n-octyl phthalate | 117-84-0 | | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| 4-Chlorophenyl-phenylether | 7005-72-3 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| N-Nitrosodiphenylamine | 86-30-6 | | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| 4-Bromophenly-phenylether | 101-55-3 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Hexachlorobenzene | 118-74-1 | 0.001 | MCL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Fluoranthene | 206-44-0 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Fluorene | 86-73-7 | 1 | DWEL | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Dibenz(a,h)anthracene | 53-70-3 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Benzp(g,h,i)perylene | 191-24-2 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Isophorone | 78-59-1 | 0.1 | Lifetime HA | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Pentachlorophenol | 87-86-5 | 0.001 | MCL | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | NA | NA | NA | NA | NA |
| Phenanthrene | 85-01-8 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| Phenol | 108-95-2 | 4 | Lifetime HA | 0.003 J | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | No | NA | NA | NA | NA |
| Pyrene | 129-00-0 | | | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.0005 | NA | NA | NA | NA | NA |
| **Dissolved Metals** | | | | | | | | | NA | NA | NA | NA | NA |
| Antimony | 7440-36-0 | 0.006 | MCL | < 0.0099 | < 0.0099 | < 0.0099 | < 0.0099 | < 0.0099 | NA | NA | NA | NA | NA |
| Arsenic TR | 7440-38-2 | 0.05 | MCL | < 0.0049 | < 0.0049 | < 0.0049 | < 0.0049 | < 0.0049 | NA | NA | NA | NA | NA |
| Aluminum | 7429-90-5 | 0.2 | SDWR | < 0.0477 | < 0.0477 | 27 | < 0.0477 | 0.168 J | NA | NA | YES | NA | No |
| Beryllium TR | 7440-41-7 | 0.004 | MCL | < 0.0005 | < 0.0005 | 0.0079 | < 0.0005 | < 0.0005 | NA | NA | YES | NA | NA |
| Cadmium TR | 7440-43-9 | 0.005 | MCL | < 0.00094 | < 0.00094 | 0.0014 J | < 0.00094 | < 0.00094 | NA | NA | No | NA | NA |
| Chromium | 7440-47-3 | 0.1 | MCL | < 0.002 | < 0.002 | 0.0122 J | < 0.002 | < 0.002 | NA | NA | No | NA | NA |
| Copper | 7440-50-8 | 1.3 | Action Level | < 0.0026 | < 0.0026 | 0.0228 J | 0.003 J | < 0.0026 | NA | NA | No | No | NA |
| Iron | 7439-89-6 | 0.3 | SDWR | 3.88 | 1.96 | 46.5 | 28.6 | 3.43 | YES | YES | YES | YES | YES |
| Lead | 7439-92-1 | 0.015 | Action Level | < 0.0089 | < 0.0089 | < 0.0089 | < 0.0089 | < 0.0089 | NA | NA | NA | NA | NA |
| Magnesium | 7439-95-4 | | | 22.7 | 17.2 | 32.2 | 14.5 | 23.8 | | | | | |
| Manganese | 7439-96-5 | 0.05 | SDWR | 6.27 | 0.223 | 4.08 | 2.91 | 3.14 | YES | YES | YES | YES | YES |
| Mercury | 7439-97-6 | 0.002 | MCL | < 0.00007 | < 0.00007 | < 0.00007 | < 0.00007 | < 0.00007 | NA | NA | NA | NA | NA |

~~Table 2~~

**Comparison of Detected Constituents in Seep and Surface Water Samples to USEPA Drinking Water Standards and Health Advisories**
**E.H. Schilling Landfill Surface Water and Seep Data, July 2, 2002**
**Ironton, Ohio**

| Chemical | CAS No. | Screening Value (mg/L) | Screening Value Type | Seep 1 (mg/L) | Seep 2 (mg/L) | Seep 3 (mg/L) | Seep 4 (mg/L) | Seep 5 (mg/L) | Is Max. Det. Conc.> Screening Value: Seep 1 | Seep 2 | Seep 3 | Seep 4 | Seep 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nickel | 7440-02-0 | 0.1 | Lifetime HA | 0.0119 J | 0.0019 J | 0.122 | 0.0155 J | 0.0418 J | No | No | YES | No | No |
| Silver TR | 7440-22-4 | 0.1 | Lifetime HA | 0.0014 J | < 0.0014 | < 0.0014 | < 0.0014 | < 0.0014 | No | NA | NA | NA | NA |
| Zinc | 7440-66-6 | 2 | Lifetime HA | 0.0439 | < 0.0049 | 0.173 | 0.0171 J | 0.0617 | No | NA | No | No | No |
| Sodium | 7440-02-2 | | | 34.2 | 21.8 | 11.6 | 8.19 | 19.3 | NA | NA | NA | NA | NA |
| Potassium | 7440-09-7 | | | 4.75 | 6.86 | 2.43 | 6.12 | 4.82 | NA | NA | NA | NA | NA |
| Calcium | 7440-70-2 | | | 79.4 | 79.7 | 57.6 | 69.3 | 88.2 | NA | NA | NA | NA | NA |
| **Total Metals** | | | | | | | | | NA | NA | NA | NA | NA |
| Antimony | 7440-36-0 | 0.006 | MCL | < 0.0099 | < 0.0099 | < 0.0099 | < 0.0099 | < 0.0099 | NA | NA | NA | NA | NA |
| Arsenic TR | 7440-38-2 | 0.05 | MCL | < 0.0049 | < 0.0049 | < 0.0049 | < 0.0049 | < 0.0049 | NA | NA | NA | NA | NA |
| Aluminum | 7429-90-5 | 0.2 | SDWR | < 0.0477 | < 0.0477 | 26.8 | 0.711 | 6.01 | NA | NA | YES | YES | YES |
| Beryllium TR | 7440-41-7 | 0.004 | MCL | < 0.0005 | < 0.0005 | 0.008 | < 0.0005 | 0.002 J | NA | NA | YES | NA | No |
| Cadmium TR | 7440-43-9 | 0.005 | MCL | < 0.00094 | < 0.00094 | 0.0014 J | < 0.00094 | < 0.00094 | NA | NA | No | NA | NA |
| Chromium | 7440-47-3 | 0.1 | MCL | < 0.002 | < 0.002 | 0.0114 J | < 0.002 | < 0.002 | NA | NA | No | NA | NA |
| Copper | 7440-50-8 | 1.3 | Action Level | < 0.0026 | 0.0036 J | 0.023 J | < 0.0026 | 0.0042 J | NA | No | No | NA | No |
| Iron | 7439-89-6 | 0.3 | SDWR | 4.97 | 5.89 | 46.5 | 29.9 | 7.59 | YES | YES | YES | YES | YES |
| Lead | 7439-92-1 | 0.015 | Action Level | < 0.0089 | < 0.0089 | < 0.0089 | < 0.0089 | < 0.0089 | NA | NA | NA | NA | NA |
| Magnesium | 7439-95-4 | | | 23.1 | 17.3 | 32 | 14.5 | 24 | NA | NA | NA | NA | NA |
| Manganese | 7439-96-5 | 0.05 | SDWR | 6.39 | 0.232 | 4.07 | 2.91 | 3.36 | YES | YES | YES | YES | YES |
| Mercury | 7439-97-6 | 0.002 | MCL | < 0.00007 | < 0.00007 | < 0.00007 | < 0.00007 | < 0.00007 | NA | NA | NA | NA | NA |
| Nickel | 7440-02-0 | 0.1 | Lifetime HA | 0.0117 J | 0.0029 J | 0.121 | 0.015 J | 0.0444 J | No | No | YES | No | No |
| Silver TR | 7440-22-4 | 0.1 | Lifetime HA | < 0.0014 | < 0.0014 | < 0.0014 | < 0.0014 | 0.0014 J | NA | NA | NA | NA | No |
| Zinc | 7440-66-6 | 2 | Lifetime HA | 0.0083 J | 0.0103 J | 0.167 | 0.0167 J | 0.07 | No | No | No | No | No |
| Sodium | 7440-02-2 | | | 34.2 | 21.8 | 11.3 | 8.17 | 19.4 | NA | NA | NA | NA | NA |
| Potassium | 7440-09-7 | | | 4.6 | 6.96 | 2.42 | 6.21 | 4.93 | NA | NA | NA | NA | NA |
| Calcium | 7440-70-2 | | | 80.6 | 79.7 | 57.1 | 70.8 | 87.4 | NA | NA | NA | NA | NA |
| **Other Parameters** | | | | | | | | | NA | NA | NA | NA | NA |
| Total Dissolved Solids | | 500 | SDWR | 473 | 373 | 914 | 422 | 563 | No | No | YES | No | YES |
| Chloride | 16887-00-6 | 250 | SDWR | 19.5 | 25.9 | 8.2 | 6.8 | 9.7 | No | No | No | No | No |
| Sulfate | 14808-79-8 | 250 | SDWR | 159 | 75 | 660 | 219 | 362 | No | No | YES | No | YES |
| Nitrate Nitrogen | 14797-55-8 | 10 | MCL | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | NA | NA | NA | NA | NA |
| Nitrite Nitrogen | 14797-65-0 | 1 | MCL | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | NA | NA | NA | NA | NA |
| Bicarbonate | 71-52-3 | | | 206 | 209 | < 0.41 | 52.8 | 15.6 | NA | NA | NA | NA | NA |
| Carbonate | 20227-92-3 | | | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | NA | NA | NA | NA | NA |

TR-Trace analysis
NA-Not Applicable. Either no standard exists or the parameter result is a non-detect value.
MCL-Maximum Contaminant Level.
DWEL-Drinking Water Equivalent Level.
Lifetime HA (Health Advisory)-The concentration of a chemical in drinking water that is not expected to cause adverse noncarcinogenic effects for a lifetime of exposure.
Action Level- Lead and copper are regulated by a treatment technique that requires systems to control the corrosiveness of their water. If more than 10% tap water exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.
SDWR-Secondary Drinking Water Regulation-non-enforceable federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.